TECHNOLOGY DEPT.

American Aviation

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The Independent Voice of American Aeronautics

NOVEMBER 1, 1944

The Beginning

THE INTERNATIONAL aviation conference, probably the largest and most important aviation meeting ever called, is now under way in Chicago.

Fortnightly Review

The effect this conference can have on postwar civil aviation is almost too great to imagine. It might be said that this is the beginning. New concepts and ideas will be introduced and discussed, the principles of a new multilateral air navigation convention will be considered. Properly handled, it can be a good beginning.

The United States will be dealing with some astute international traders, but we should insist upon our just rights as the greatest aviation nation in the world. As this magazine has said editorially, the request that landing rights be given for U. S. airlines along the major trunk air routes of the world would seem to be a small concession to ask of European countries.

The membership of the U. S. delegation is about what had been expected. It includes the men who have been handling the negotiations to date, and who have been doing the thinking about our place in the air world. Inclusion of Senate and House members will serve to keep Congress informed and will enable these members to make their contribution where it should be made—at the conference, instead of on the floor of Congress at some later date, when there might have been charges that they had been presented with a *fait accompli*. By and large, the delegation should be able to hold its own.

It is heartening to see some industry names among the advisors to the delegation. The men who will have something to do with the operation of the

(Turn to page 6)

Conference Leader

Adolf A. Berle, Jr., Assistant Secretary of State, heads the U. S. delegation to the international aviation conference now under way in Chicago. Berle has represented the U. S. in bilateral aviation discussions with other governments during the past several months. (Story on page 19).

Late Bulletins

'Go Sign' Given

Authority to proceed with modification or overhaul of any surplus plane obtained from the Government has been given by the WPB. Materials may be obtained under Order P-47, or by applying a special rating of AA-3, or an allotment symbol.

Civil Travel Approved

President Roosevelt has authorized ATC and NATS to carry nonmilitary passengers and cargo on foreign routes where the transportation is deemed in the national interest by the Army, Navy, or State Department. Reasonable fares will be charged and traffic will not be handled that can go via commercial airlines.

Trend of The News

Materials Pose Problem: Despite extensive efforts along the entire industry front during the summer, the problem of disposing of surplus materials accumulated by aircraft manufacturers has not yet been solved. The Government warehousing plan, it develops, is full of kinks which have not yet been straightened out, particularly with regard to surpluses in the subcontractors' hands. Numerous individual problems also have arisen at the various plants. Industry observers say this is one of the pre-conversion matters which is going to require close attention soon.

Super-Dooper Planes: Representatives of one or more of the big airlines are shopping around from factory to factory, not looking for the immediate postwar product but the super-dooper stuff of future years. Such looking over of the plane field indicates comprehensive future planning. The plants, however, guarding their ideas closely, are eager that information should not get into other factories' hands.

Surplus for Education: The machinery has been well organized to begin the distribution of large quantities of surplus aircraft and materials, including engines, to schools and colleges throughout the nation for educational purposes. However, it has not been possible to set the machinery in motion pending the appointment by President Roosevelt of the three-man board created by Congress to supervise surplus property disposal. While this program will utilize only those surpluses not defined as commercially useful, it will help to relieve the surplus situation.

Soy Beans and Planes: Glenn L. Martin has purchased a packing plant at Chestertown, Md., for use as a food and soy bean processing plant. The plane manufacturer has an estate of 1700 acres in Broad Neck and Kennedyville sections of Kent County.

Sales to France: The probability of sale of new American-made planes to France has been heightened by the recognition by the United States of the De Gaulle regime as the provisional government of France, and the subsequent report that the U. S. probably will act soon to "unfreeze" approximately one billion dollars worth of French gold here. For some time France has been eager to buy aircraft from some American manufacturers with

(Turn to page 4)

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XUM

Picture of Republic Employees Massed to Honor a Returning Thunderbolt Ace

10,000 THUNDERBOLTS!

The 10,000th Republic Thunderbolt is on its way to the fighting front. On the day it came off the assembly lines, there was a moment's pause for the "christening," a hearty cheer, and the line started moving again. A small incident, perhaps, in a world at war... but a significant one.

Created to do things no airplane had ever done before, the Thunderbolt has helped our Air Forces solve one tactical problem after another... from long distance bomber escort to dive-bombing and ground strafing. Today, bearing the colors of five United Nations, the Thunderbolt fights on every front and from the remotest outposts.

The Thunderbolt is a complex machine, heavily armed and armored, superpowered, highly supercharged. It weighs more than eight tons. It costs $100,000. It takes 20,000 man-hours to build. It was created and produced in record time in record quantities—10,000 in 27 months—not by a "miracle" but through typical American ingenuity, downright hard work and splendid coöperation by thousands of people—civilian and military.

Republic is proud, naturally, of the technical excellence of the Thunderbolt, of its production record, and of the superlative battle record of the pilots in whose hands it springs to life as a weapon of war.

But Republic is prouder still of the spirit of those Americans who joined hands and brains to build it, and who today press on to new thousands of Thunderbolts . . . and Victory!

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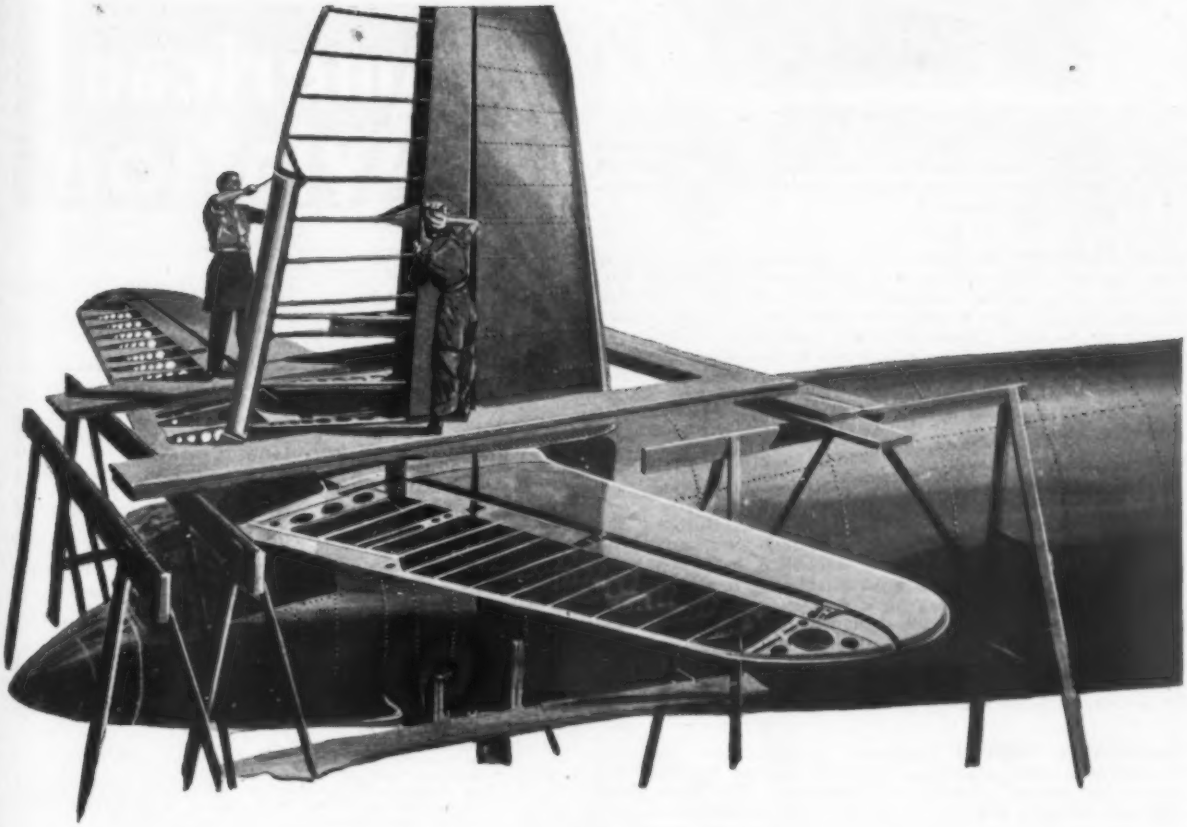

CRAFTSMEN IN AIRCRAFT PRODUCTION

WITH more than 30 years' experience in aircraft design and construction, engineers at Goodyear Aircraft Corporation have been asked to tackle some of the toughest war production assignments, including empennage and wing design and construction. That this company has succeeded in turning out components for 14 warplanes plus complete Navy airships and Corsairs speaks well for the craftsmanship of Goodyear—a great name in aircraft. Goodyear Aircraft Corporation, Akron, Ohio.

GOODYEAR
A GREAT NAME IN AIRCRAFT

BUY WAR BONDS BUY FOR KEEPS

Trends

(Continued from page 1)

French gold already in this country, but such negotiations were held up pending recognition of a French government. Approval of the Army and Navy still must be obtained before any production can go for sale abroad.

Faster Fighters: The placing of an additional order involving more than 40 million dollars with the Ryan Aeronautical Co., San Diego, Cal., calling for hundreds of secret Navy fighters, indicates that the Navy's needs for faster and improved fighter aircraft will be met. The revolutionary new plane is the first of its type to be produced for the Navy on the West Coast. It already is in production. In addition to the latest order, Ryan already is at work on an 18-million-dollar Navy contract for the same type of planes.

War Economy Switch: The Aircraft Parts Manufacturing Association, organized in Los Angeles in 1940, and representing approximately 175 manufacturing companies, is altering its by-laws to include all legitimate manufacturers. The move will insure continuation of the Association's services to Los Angeles manufacturers, many of whom in the postwar period will return to civilian products outside the aircraft industry. The Association has an extensive industrial relations division and a business service section which are concentrating on termination procedures, disposal of surplus property, taxes, renegotiations, etc. Interpretation of Government orders and legislation is another function which the Association will concentrate upon in the adjustment period.

Manpowerr Again: Manpower problems are beginning to loom once more as major headaches during the next few months for several aircraft manufacturers. The West Coast area last fortnight reported it is now 8200 workers short and that the turnover rate had increased from seven percent to nine percent through August and September. Consolidated Vultee and Boeing particularly need workers. Favorable war news continues to be the chief cause of labor turnover as workers seek employment where they feel there will be no postwar dislocations. Major ray of hope lies in the fact that munitions contracts of various kinds will be cut back with V-E day and thousands of workers undoubtedly will be released. As such releases begin, it is felt that aircraft workers in many categories will decide to hang onto their jobs as long as possible.

Aircraft Will Lead: The War Production Board discloses that when contemplated cuts in munitions production are made following V-E day, aircraft will be the largest single category to remain on the "must" list. Latest estimates indicate that the monthly average of munitions output in the second quarter following V-E day will be slightly more than three billion dollars compared with the current level of almost five and a half billion.

Speed Aplenty: Speeds of American-built jet planes as developed in flight tests have been amazing. The speeds of these planes, although known to be well beyond the speed of sound, are, of course, military secrets. The point-to-point time, although surprisingly small over considerable distances, is reduced somewhat by take-off and landing rates. The terrific speeds are attained after altitude is gained. Development is progressing satisfactorily even though some of the materials used in the fuel is limited and quite expensive.

Cutbacks Cushioned: Large cutbacks in war production, foreseen as an employment and morale problem this fall, have not developed in anything like expected volume and further major cuts appear unlikely before victory in Europe. The extent to which the impact of cutbacks was misjudged in many official quarters is indicated in the recent abandonment of the Army's secret P-75 fighter plane. Lay-offs of 10,000 to 12,000 workers were expected by many observers at two Fisher body plants in Cleveland, but it has developed that most of the employes were transferred to work on the B-29 Superfortresses and only 2,800 were discharged.

American Aviation

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Editorial

(Continued from page 1)

U. S. routes, and the men who will manufacture the aircraft can furnish the know-how needed by the delegation on these points.

That there will be differences of opinion at the conference is inevitable. Certain British viewpoints, for example, differ from our own. A British Empire meeting was held in Montreal last week, and while the British insist that there is no intention of ganging up on the U. S. or anyone else, it remains that a player who knows what cards his partner is going to lead knows better how to play his own. Two weeks ago, the British issued a White Paper, proposing establishment of an international air authority which would administer a convention covering a wide variety of subjects. Among other things, the convention would "provide for the elimination of uneconomic competition by the determination of frequencies, . . . the distribution of those frequencies between the countries concerned and the fixing of carriage rates in relation to standards of speed and accommodation."

Britain has been proposing this procedure for many months, and it conflicts with the American view. What will happen remains to be seen. It is to be hoped that the U. S. position prevails. A world air authority controlling such matters as frequencies is not needed at this time.

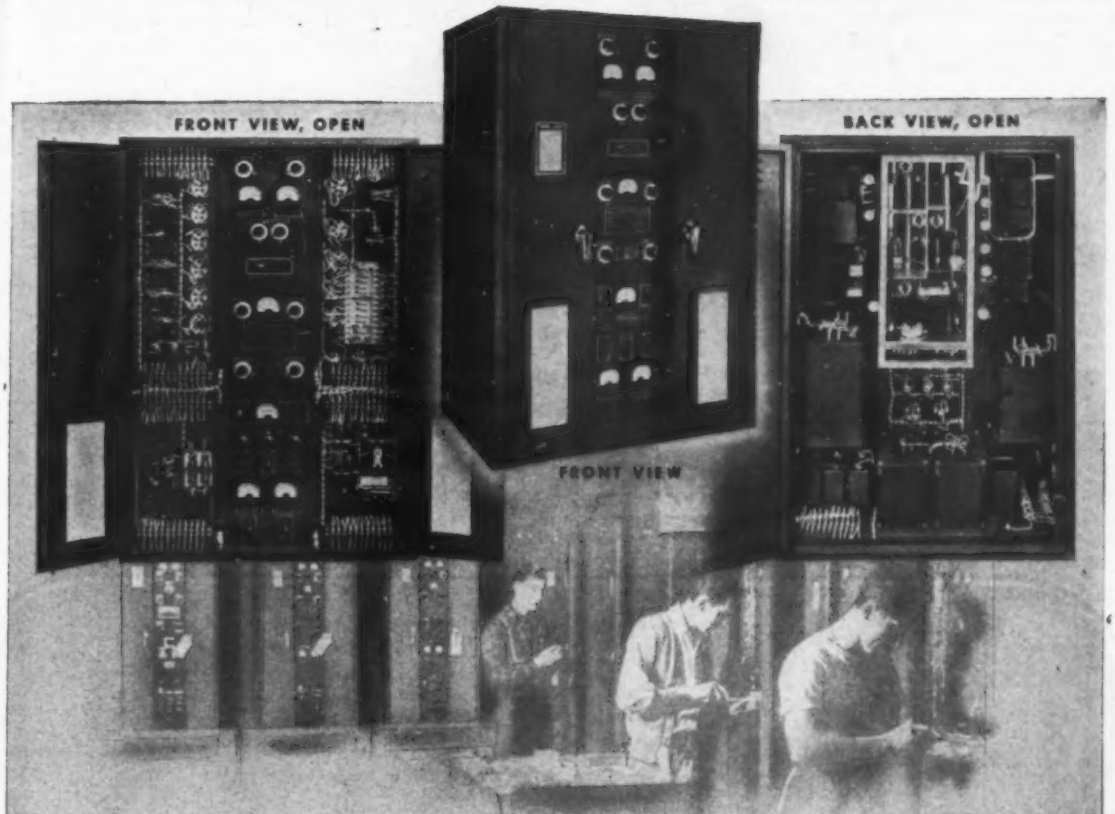
The press should be given every opportunity to present the facts of this conference to the public. Indications are that our State Department and Civil Aeronautics Board favor the widest possible publicity, and the other countries of the world would do well to go along with this idea. Closed sessions should be held to a minimum. Gordon England, British aircraft designer and manufacturer, recently expressed an opinion on aviation negotiations that can well apply to this conference. "If civil air transport is to fulfill its proper destiny," he said, "what possible reason can there be for secret negotiations? Who is trying to get something out of it, and for whom? . . . Since the enemy can in no way be concerned in our plans for civil aviation after the war, and any we may be working out can give him no military or political comfort whatsoever, the plea that secrecy is necessary for purposes of security falls completely to the ground."

There has been evidence in the past two weeks of a growing co-operation between the various branches of our government, notably between the State Department and the Civil Aeronautics Board, as preparations for the conference progressed. There have been officials—high officials—who did not believe that this was the time for an international conference. They have now set aside their personal feelings. The house has been put in order.

It can be a good beginning.

Lesson for the Future

NOT LONG AGO, Senator James Mead of New York spoke on the floor of the Senate. He noted that after the U. S. airlines lost half their equipment they



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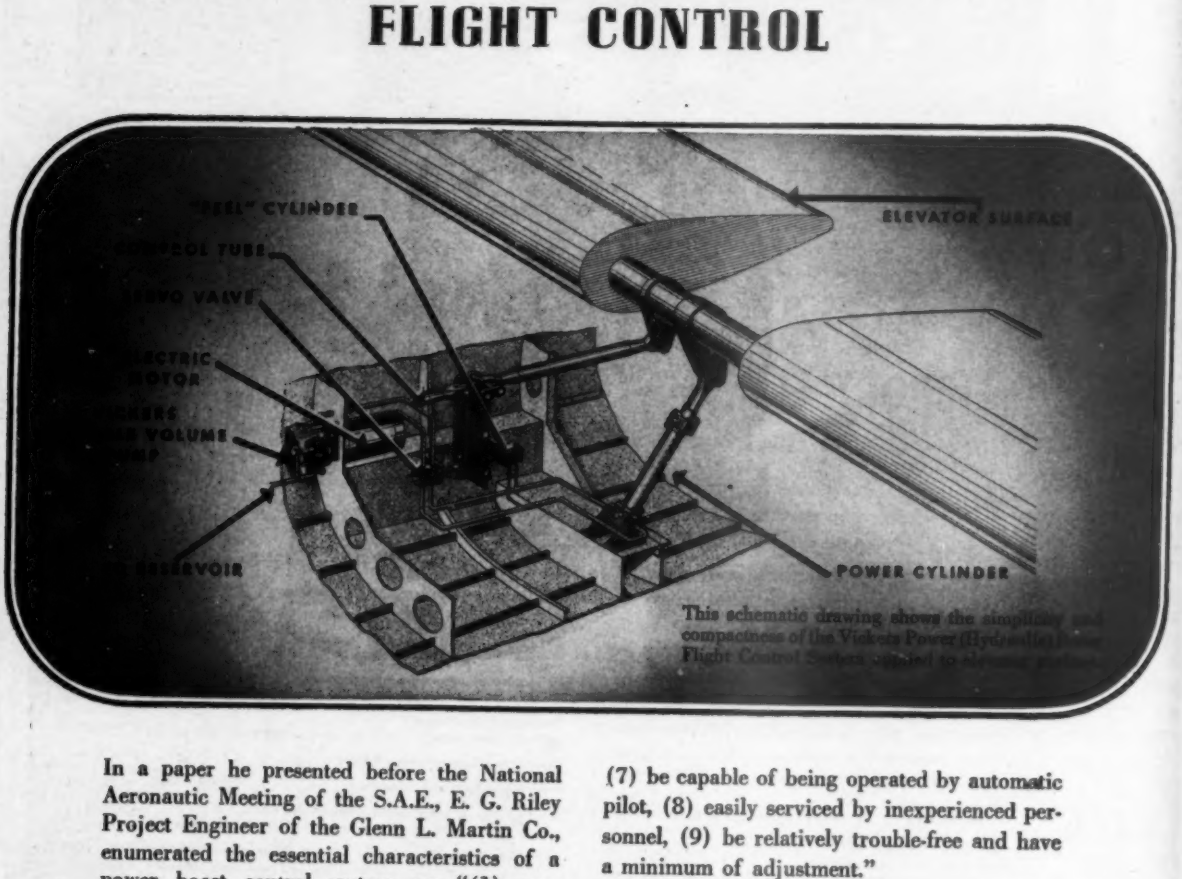

This schematic drawing shows the simplicity and compactness of the Vickers Power (Hydraulic) Flight Control System applied to elevator surface.

In a paper he presented before the National Aeronautic Meeting of the S.A.E., E. G. Riley Project Engineer of the Glenn L. Martin Co., enumerated the essential characteristics of a power boost control system as: "(1) proportional feel, (2) feedback and free control stability, (3) immediate and smooth response even after long idle periods, (4) manual standby, (5) instantaneous control by pilot in case of failure, (6) operate satisfactorily under temperatures from minus 65° F to plus 150° F, (7) be capable of being operated by automatic pilot, (8) easily serviced by inexperienced personnel, (9) be relatively trouble-free and have a minimum of adjustment."

In his summary, Mr. Riley made the following statement: "It can be concluded, therefore, that the Vickers power boost control unit is capable of satisfactorily fulfilling all the requirements set forth." This Vickers equipment is now standard on the Mars airplane.

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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

increased their utilization by almost 40 percent and that the passenger load factor in the first half of 1943 was 86 percent against 67 percent in the previous year. He then had this to say:

"When it is borne in mind that these figures are overall industry figures, it is evident what a magnificent record of management there has been. All of this has been accomplished without relaxing safety standards, and the standards of passenger handling and of service have been kept at a remarkably high level as well.

"In this experience there is an important lesson for the future. It is a lesson which has been learned by our military forces on far-flung fronts. That is that the airplane is capable of most intensive utilization, so that one airplane can be made to go a long, long way. In terms of cheap transportation for both passengers and cargo this simple fact will some day mean a great deal. If our air transport system is built up in the future as we have tried to build it in the past, on a basis which will assure that it can be operated in the most efficient manner, and with improvements constantly encouraged, we have very high stakes, indeed, to win. The stakes are a new system of transportation, nation-wide and world-wide, having peculiarly inherent advantages, capable one day of providing service at very low cost, and bringing both to passengers and to shippers opportunities for travel, trade and communications never before dreamed of."

Senator Mead's remarks need little editorial comment —they *are* an editorial. It is indeed gratifying to know that the tremendous wartime effort of the air transport industry is recognized and appreciated among the country's legislators. It is even more gratifying to know that Jim Mead, whose name has been identified with aviation legislation for many years, sees clearly the part the airplane will play in the future transportation of this country and of the world. The Congress of the United States will play a big part in shaping the future of this industry. Its members would do well to read Senator Mead's remarks.

Helping Hand Needed

THE DECISION by aircraft manufacturers to continue as a team the notably successful trio made up of the National Aircraft War Production Council and the East and West Coast units of the Council appears to be sound judgment. While a great many of the production problems, which the Councils were created to solve, have been brought under control, the feeling has been strong that actual abolition of the Councils at this time would be immature.

Among other things, the NAWPC by continuing its work on an active basis affords a helping hand and considerable know-how to the Aeronautical Chamber of Commerce which is making a good start in handling the problems facing it as a trade organization. Nothing should be done at this time to hamper or weaken the ACCA in reaching a high operating efficiency.

Furthermore it appears to be good public relations for the industry to continue its Production Councils. The Navy, in particular, has frowned upon the closing of any unit which is furthering the cause of the war.

Certainly it would take some of the luster from the star of accomplishment which has marked the course of the Councils to scrap them before victory in Europe, or for that matter before aviation has completed its historic contribution to the war in the Pacific.

ERIC BRAMLEY.

Letters

How to Maintain 'Port?

Madison, Wis.

To the Editor:

I submit one suggestion which it seems to me should certainly be given the consideration due it by some organization that is genuinely interested in the future of aviation development.

I believe you will agree that 75 to 90 per cent of the stress now being placed on aviation is for the development of more and more airports throughout the country. I have a large file showing how to proceed in order to obtain an airport, but as yet I have seen nothing telling a municipality how it can develop sufficient aviation to warrant the maintenance of an airport which is already established.

For example, here at Madison, which is both the Capital and University City of Wisconsin, we now have a 600-acre $4,500,000. Class 4 port. That comes about because our $1,000,000 300-acre port was leased by the Army Air Forces for a technical radio school. We have more than doubled the port, and it is, of course, a most excellent one.

Shortly—as soon as the Army is through with this port—our big problem is to know how to keep it in operation. Specifically, what can Madison do to develop sufficient interest in travel and use of air facilities to warrant this community of 75,000 people in maintaining its port.

What it seems to me is vitally needed is a manual outlining procedure for municipalities to follow in order to build up local interest in aviation. That calls for a study of what various communities have done, and a compilation of those ideas. It would not seem to be a very difficult undertaking, but for approximately six years I have endeavored to secure it without success.

J. W. JACKSON
Executive Director,
Madison and Wisconsin Foundation

Wanted Air Cargo

Baltimore, Md.

To the Editor:

In a few of our conversations with potential air cargo shippers several interesting things are apparent. (1) The general public is sold on the value of air transport due to the record of ATC and NATS. (2) Shipping men in industries that are potential air cargo users have a tendency to compare shipping costs per ton mile directly, neglecting the factors of interest, inventory and convenience to customer's demands. (3) That merchandising executives are willing to pay for added value, even if direct transportation costs are high.

If condensed into a good slogan for industry-wide use on all stationery, advertising and packages and even at point of sale on airborne merchandise, air cargo's sale to the general public and to the sales executive can be assured. Proved value and public demand would then be tantamount to ordering air transport from their shipping men, in instances where it is at all feasible.

"The Cream of the Crop Comes by Air", as suggested by Dick VonPostel of our office is merely typical of what might be adopted and in no way intended to be a final suggestion. We suggest that the actual slogan be an industry wide slogan contest if interest warrants it. to which we will be happy to contribute at least six more that the boys here have on tap.

W. W. McDOWELL,
The Glenn L. Martin Co.

Attention, Dr. Herbolsheimer

Winston-Salem, N. C.

To the Editor:

Your article in the last issue of *American Aviation* concerning Dr. Herbolsheimer's research into aircraft accidents affirms a few points quite different from the doctor's own.

As an employee of the Civil Aeronautics Administration on military leave and one who has for some time analyzed accidents in the Army Air Forces in numbers exceeding the 300 in Dr. Herbolsheimer's study, I should like to warn him against hasty conclusions regarding the prominence of "Pilot Error" in aircraft accidents. Methods of analysis utilizing nomenclature recorded in the article have, generally speaking, too often been based upon the concept that pilots *should* be perfect. Any deviation from this state of perfection is therefore viewed not so much with scientific objectivity as with a biased, value-judgment, censuring attitude.

Such methods were originated at a time when the aviation industry was small, when civil flying was limited to small groups of individuals, when the air arms of the military services were infant. Perfection in pilot technique and judgment were therefore both possible and insisted upon.

At that time it was a matter of aviation comment that the airlines "wouldn't even give a pilot a look-in unless he already had 1,000 hours flying time." And when a pilot was, ultimately, accepted, he became an apprentice and underwent training for years before becoming captain of an aircraft.

But aviation has grown to such an extent that insistence on perfection has become impossible practically. Realistically, if pilots were to be grounded at every evidence of a physical ailment, for example, air operations in every sphere would move hesitatingly. The Civil Aeronautics Administration has long realized that physical perfection cannot be required of all pilots. It has, as a result, issued airmen, certificates to men who must

XUM

wear glasses, to some with only one leg, arm, or eye. And, in all probability, in order to extend the possibility of participation in aviation even further, more and more deviations from physical perfection will be permitted.

Dr. Herbolsheimer is correct in viewing suspiciously such descriptions as "error in judgment," "inattention," "fault of pilot," and others. These are loose, inaccurate, censuring. But instead of rejecting analyses of this kind, he accepts them as proof of pilot liability in air accidents.

As long as men, not robots, captain airplanes, they will be held responsible for accidents. The question that arises, however, is whether research into the accidents might reveal not only the precise area of pilot failure, but how other personnel and technological changes might help him avoid such occurrences.

An illustration will point out the analytical possibilities in a simple accident: A pilot taxies out for take-off, notes that the flaps are down, reaches for the flap switch and throws the landing-gear switch instead, causing the plane to go down on its propeller. Now, in accordance with early systems of analysis, this would probably be reviewed as an example of 100% pilot error. Insight into the situation might reveal a host of other possibilities: Was this the pilots first flight? Had he been properly checked out by his instructor? Had a member of the ground crew put down the flaps while preflighting the aircraft? Was the method of training adequate? Had the flaps been left down by the pilot who flew the plane previously? Did the ground crew indicate to the pilot that his flaps were down while he was still parked, so he could give all his attention to them? Was the cockpit designed in such a fashion that inadvertent movement of important controls was possible?

These indicate lines of investigation for even a simple accident. Positive evidence for any of them would tend to remove complete responsibility from the pilot.

More, comparative analysis among similar accidents involving other aircraft might well indicate unique features or similarities. Each of these might lead to other conclusions. Perhaps no pilot should attempt to perform item one while performing item two. Airplane "X" might be far more susceptible to errors by pilots than other aircraft. All of these may reflect the extent of pilot proficiency ultimately possible, omissions from training programs, deficiencies in the design of particular aircraft. The number of possibilities, again, is high.

Conclusions in addition to Dr. Herbolsheimer's are these: Pilot errors should not be censured, but understood in terms of the actual occurrence. Absolute pilot physical and technical perfection is, generally, a distant goal, not a practicality. Investigation into aircraft accidents must be sufficiently thorough to reveal why pilots make errors; and this can often be achieved only through comparative analysis. It should be realized that aviation itself has hardly reached the status quo of perfection, and that, as a result, pilot deficiencies can often be associated with technical ones.

CPL. LIBERT EHRMAN,
Hq. Army Air Forces
Office of Flying Safety.

Books

CLOUD AND WEATHER ATLAS, by Hugh Duncan Grant. $7.50. Coward-McCann, Inc., New York.

Enlarged photographs, charts, diagrams, and tables—196 in all—feature this volume, which is the only book that can be compared to the "International Cloud Atlas." Every form of cloud is identified by family, genus, species, and variety, according to the International System of Cloud Classification. Typical cloud formations are analyzed with respect to the weather which can be expected. Thunderstorms, tornadoes, dust storms, lightning, the Aurora borealis, and other weather signs and optical appearances are illustrated and discussed. The author, former superintendent of the Meteorological Service of the Royal Navy, is one of the most distinguished and experienced meteorological experts of the Western Hemisphere.

ANYTHING A HORSE CAN DO—The Story of the Helicopter, by Col. H. F. Gregory. 243 pp. Reynal & Hitchcock, Inc., New York. $3.00.

Col. Gregory is well qualified to write such a book because he was one of the first to recognize the importance of rotating-wing aircraft and to pilot a helicopter. He recently was given the Thurman H. Bane award in recognition of outstanding technical achievement. His book emphasizes the fact that one need know nothing about aeronautics to learn why the helicopter flies, and, in his easy, informal style, he makes the reader see, feel, and know the craft. Included are 32 pages of diagrams and photographs, some illustrating early, radical designs.

Wings of Yesterday

Twenty-five Years Ago

The Curtiss Eagle, an 8-passenger aerial liner and the first American 3-motored plane, made its first public flight from Garden City, Long Island, to Washington, D. C. In 10 days in Washington, the plane made 82 flights and carried 476 people, mostly U. S. Government and foreign government officials. (Oct. 24, 1919).

Three Aeromarine flying boats, models 50S, 40C, and 40L, flew from Key West, Fla., to Cuba, inaugurating flying service between these points. (Oct. 27, 1919).

A new American device, the reversible propeller, was tested at McCook Field, Dayton, O., permitting an airplane to land and be brought to a stop within 50 ft. (Oct. 30. 1919).

An aerial flower service was inaugurated from Paris to Copenhagen. A French plane covered the trip, with one intermediate landing in Holland, in one day. The plane carried half a ton of flowers. (Nov. 6, 1919).

Fifteen Years Ago

The British Government announced that the Royal Air Force no longer will compete in Schneider Cup Races. (Oct. 30, 1929).

Air-rail-boat service was inaugurated by Transcontinental Air Transport, the Pennsylvania and Santa Fe railroads, and the Panama Pacific Line, covering 9,000 miles in 16 days. (Nov. 2, 1929).

Baron Freidrich Warthausen, flying a Klemm-Daimler (Mercedes Benz-motored), arrived in New York, completing, except for the Pacific Ocean and two short hops in Asia, an 18,000-mile west-east flight from Berlin. (Nov. 3, 1929).

Obituaries

Milo Burcham

Milo Burcham, chief test pilot for Lockheed Aircraft Co., was killed Oct. 10 while flying an Army pursuit plane. The accident occurred about a mile from the Lockheed Air Terminal, shortly after takeoff.

Before joining Lockheed, Burcham had won a nationwide reputation as a stunt flyer, with one of his specialties being upsidedown flights. He barnstormed from improvised fields in both this country and Mexico.

Burcham was at the controls when the P-38 and the Constellation were given their first test flights and, in Pacific coast aviation circles, his name was synonymous with the latest types of Lockheed planes. He is credited with having made important studies in substratosphere flying and he used his inventive genius to design a visual oxygen meter that insures an accurate check on the oxygen flow coming into the pilot's breathing apparatus.

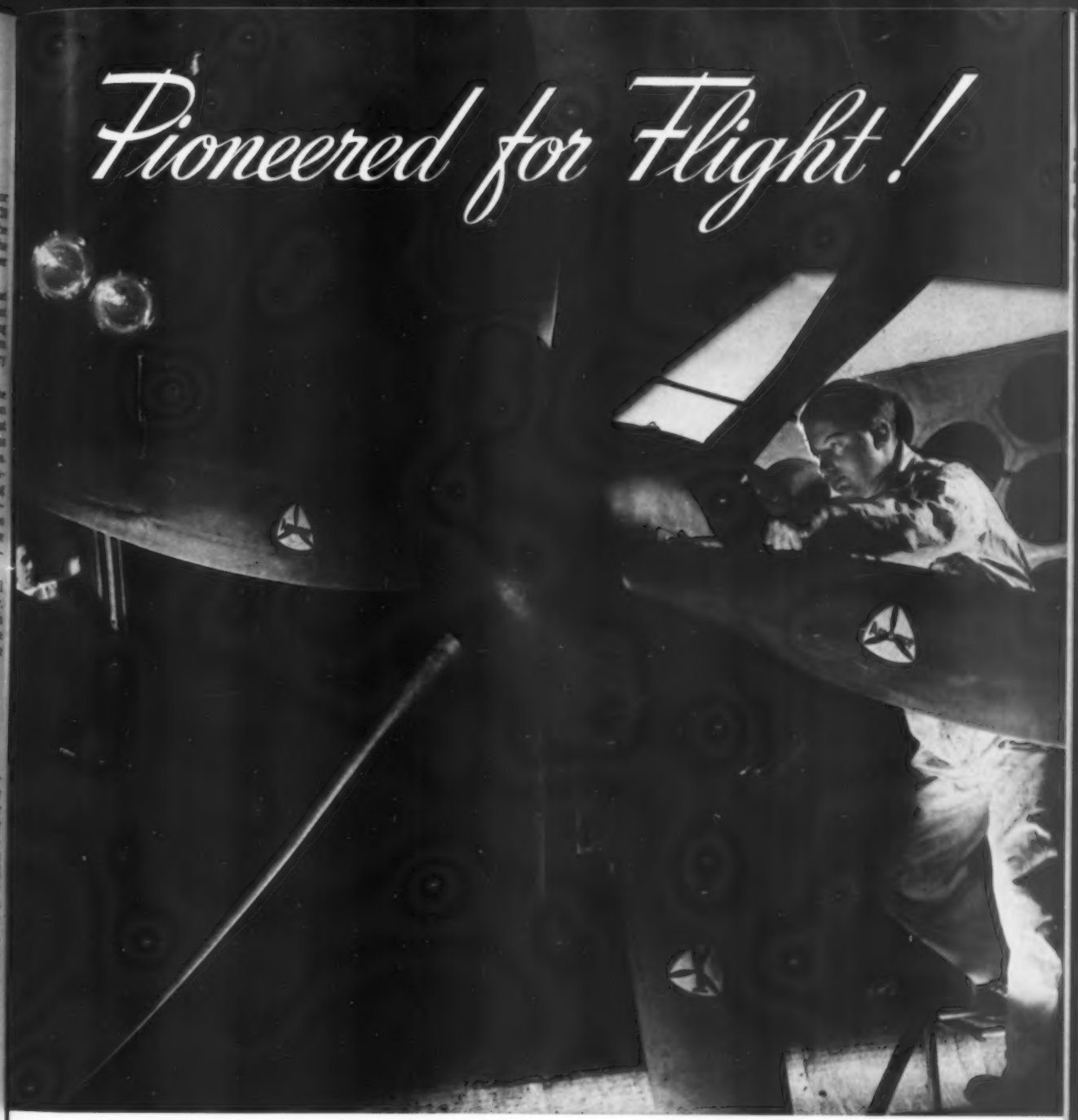
He also was credited with an airmail pick-up device which is in use today. It consists of four uprights, rigged with a net, and a device to clip the light rope used to lower the mail bag from the plane.

Lieut. Col. L. B. Cooper

Lieut. Col. Leslie B. Cooper, 50, helicopter authority, was one of five Army men killed in the crash of a plane near New Castle, Del., Oct. 18. Son of Rear Admiral Philip H. Cooper, he was general sales manager of the Curtiss-Wright Flying Service from 1929 to 1931 and vice president of Giro Associates, New York, from 1930 to 1939. He served as autogiro pilot on crop-dusting work for the Department of Agriculture in 1939-40, was publicity, sales contact man, and pilot for Pitcairn-Larsen Autogiro Co. in 1940-41, and subsequently became publicity and sales contact man for Kellett Autogiro Co. Col. Cooper served as a first lieutenant with the 27th Aero Squadron, First Pursuit Group, A.E.F., taking part in the St. Mihiel and Argonne-Meuse offensives.

E. W. Wiggins

E. W. Wiggins, head of E. W. Wiggins Airways, Inc., died Oct. 18, at Columbia, Mo. His company operated at Municipal Airport, Columbia, and at Metropolitan Airport, Norwood, Mass., and he was a partner in the Wiggins-Marden Aero Corp., Camden, Ark., which formerly operated a contract flying school for the Army Air Forces. The company manufactures aircraft assemblies, distributes planes and accessories, and operates flight schools. E. W. Wiggins, Jr., will carry on the business. He is a graduate of Amherst College, a former pilot for Grace Airlines in South America, and now is in Naval aviation.



THIS GIANT six-blade Aeroprop was developed for specific military use. It is the only dual-rotation propeller now in production for American fighting planes. Despite the unique problems encountered in combining two sets of contra-rotating blades, this propeller embodies the same simplicity, lightness, and strength that are the basic engineering principles of all Aeroprops. Years ahead in design it offers new horizons for the builders of peace-time planes.

Let's Finish the Fight! BUY BONDS!

Aeroprop

In War and Peace, Propeller Production at its Best!

AEROPRODUCTS DIVISION • GENERAL MOTORS CORPORATION • DAYTON, OHIO

GM ARMS FOR VICTORY

Two miles up - with an ear to the ground

Keeping posted high in the air is one secret of successful flying. The ground keeps track of the plane. The plane knows the weather, the course, and what it's like at the field.

Lear was among the very first to make aircraft radios — had gained an enviable reputation for fine radio and navigation instruments long before the war — was ready when war needs demanded greater and greater technical development.

Some of these developments can't even be mentioned now. They're too secret. Some are in the field of electric aircraft controls. Some will have no use outside of war.

But there are others that hold vast promise for everyone when peace returns.

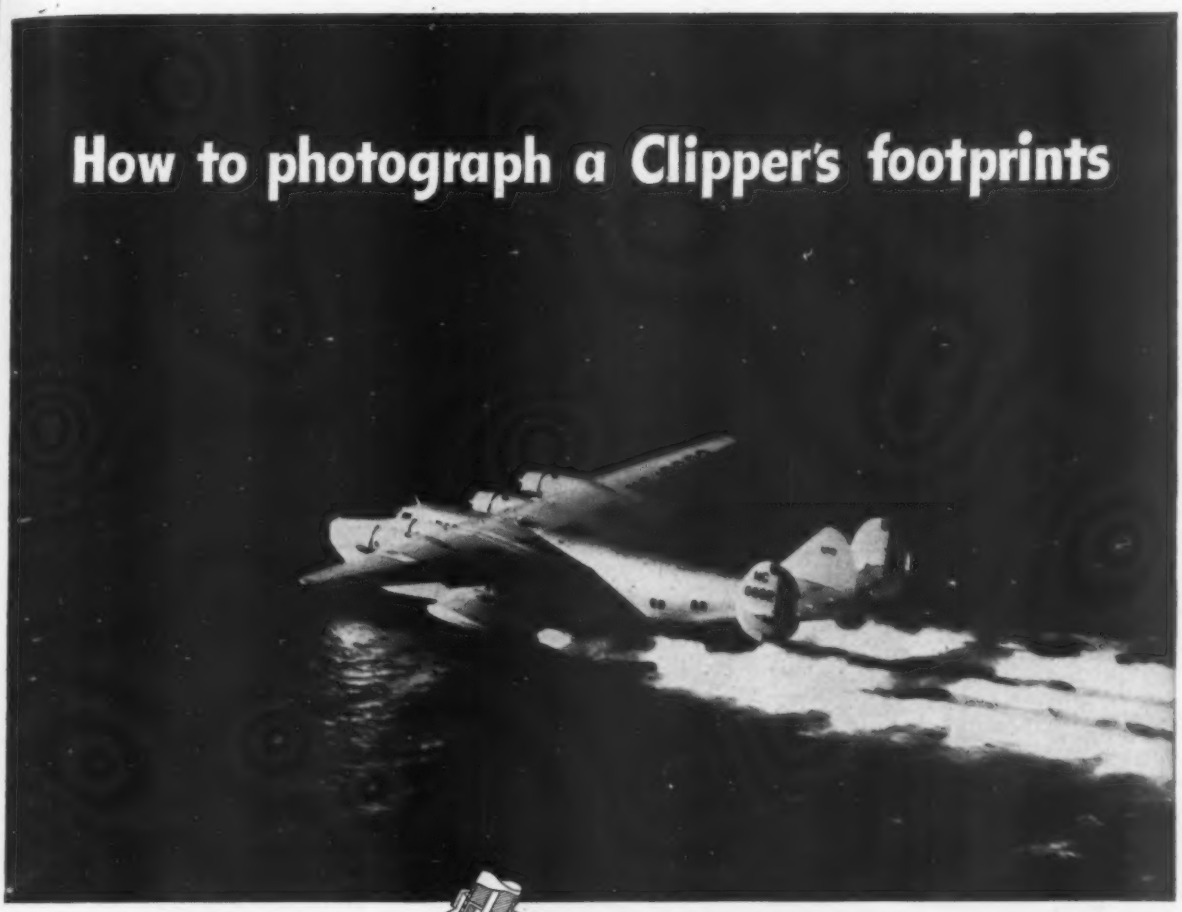
With its war job done, Lear will turn its discoveries, its developments, the resources of its laboratories and plants toward adding new comforts, new conveniences, new pleasures to the lives of America's families.

PLANTS: Piqua, O., and Grand Rapids, Mich. BRANCHES AT: New York, Los Angeles, Chicago, Detroit, Cleveland.

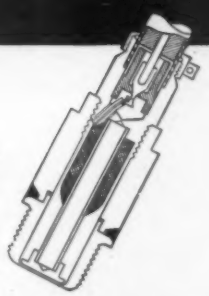
LEAR INCORPORATED
PIQUA · OHIO

Formerly Lear Avia, Inc.

How to photograph a Clipper's footprints

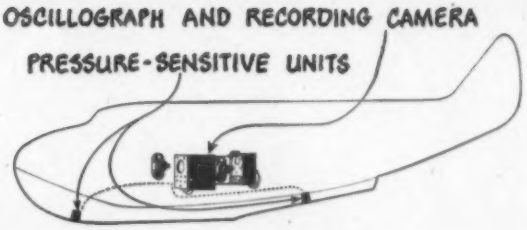


SENSITIVE ALLOY ROD IN CENTER TRANSMITS, ELECTRICALLY, SLIGHTEST VARIATION IN PRESSURE



OSCILLOGRAPH AND RECORDING CAMERA

PRESSURE-SENSITIVE UNITS



1. This is a "pressure-sensitive unit," a Standard of California development in petrolectronics (use of electronics in petroleum research). When Pan American World Airways wanted to study the effect of the pounding of take-offs and landings on the hulls of their Clippers they asked if this device could be used.

2. We thought so. It was an unusual job for petroleum engineers, but Standard's research staff—the California Research Corporation—is often consulted by airlines. For this job, two pressure-sensitive units were attached along the keel line of a Clipper hull. These were connected to an oscillograph and a recording camera.

PART OF PHOTOGRAPHIC RECORD OF HULL PRESSURES

3. Here are the footprints of a Clipper during take-off, time of greatest strain on flying boat hulls. The oscillograph record shows little water pressure on the forward hull area. But the jagged upper track reveals that greater pressures battered the hull farther aft.

4. These tests that reassured Pan American as to the strength of their Clipper hulls emphasize again that Standard leadership in aviation research rests upon fundamental knowledge of all phases of aircraft operation. This thorough understanding of aviation's needs enables us to produce even better Standard Aviation Gasolines and Lubricants for Pan American, and flyers everywhere.

STANDARD OF CALIFORNIA

Ready...

Ready indeed is this soldier of the skies equipped with his **SAFE-T-CHUTE**. And ready also is our Company to keep pace, not only with the needs of those who fly, but with the development of other types of safety equipment. ☆ ☆ ☆ ☆ Today we're making **SAFE-T-CHUTES** for the paratroop and combat flyers... but when Victory has been won we shall turn our resources to the manufacture of any form of **SAFE-T-PRODUCT** for which our broad experience has equipped us. At this time we invite inquiries from those who have a problem of designing or developing safety equipment in the apparel or kindred lines. ☆ ☆ ☆ ☆ Our engineering staff is available for consultation and we are prepared to plan, advise or manufacture.

NEW educational air-safety film available for colleges—training schools—high schools.

ALSO write for the informative Switlik Parachute Chart and new manual. All free for the asking.

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THE MORE BONDS YOU BUY
THE MORE HOURS THEY FLY

SWITLIK PARACHUTE COMPANY
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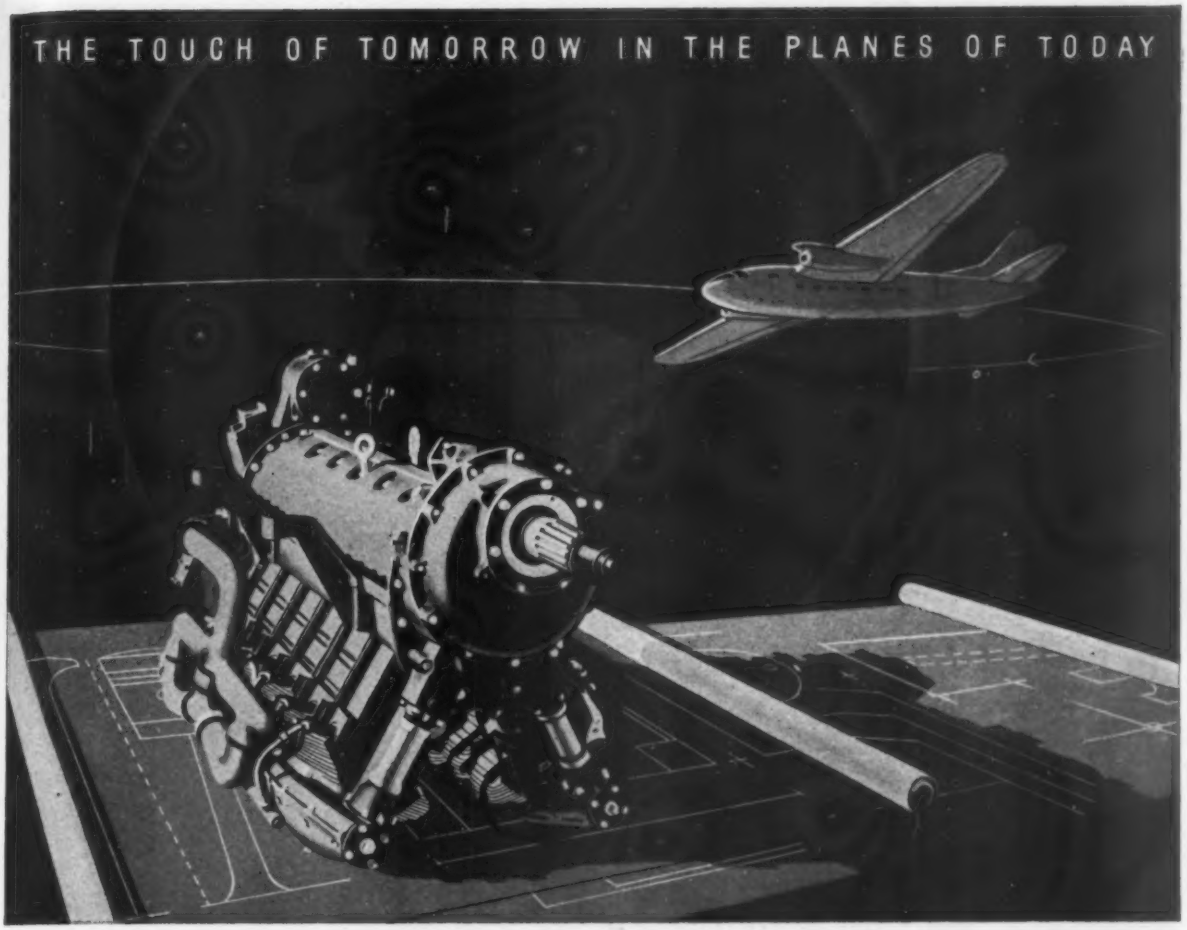
U.S. Army Air Force Photo



RESEARCH PAYS a 30,000 Mile Bonus

Clean cut and durable as a gem, Ranger engines deliver their dynamic punch under the toughest year-'round flying assignment in the book.

Normally, engines in service are "pulled" for major overhaul after 600 hours. But Rangers have consistently paid a service "bonus" up to 50 per cent. It's common for a Ranger engine to reach the *900-hour* check point, purring sweetly, delivering full power . . . 30,000 and more *extra* miles of flight.

Ranger-powered planes cut through the rugged cold of Canada, the dust-laden heat of deserts; they fly in Mexico, throughout South America—and in South Africa. They do their flight job, sturdily, under all sorts of field conditions.

The twelve cylinder Ranger, for example—aircooled for weight economy, inverted for a better field of vision, inline for better streamlining—logs hours and hours of time in rigorous wartime operations. Yet Rangers continue to pay a bonus—hundreds and hundreds of *extra* hours in the air.

In use only on military planes today, Ranger engines on commercial airline and private planes tomorrow will provide those extra hours of service for efficient and economical operation.

Fairchild research—the constant quest for better materials, better methods, better results—has made this Ranger bonus possible. It springs from Fairchild engineering knowledge and experience that lends the "touch of tomorrow to the planes of today".

BUY U. S. WAR BONDS AND STAMPS

RANGER AIRCRAFT ENGINES

Division of Fairchild Engine and Airplane Corporation · Farmingdale, Long Island

Boeing B-29 Superfortress in flight

Size alone wasn't enough

The Army wanted an airplane that would carry a *heavier bomb load* . . . *farther, faster* and *higher* . . . than any had before.

Size alone wasn't enough. There were already single, experimental models of massive airplanes; but they lacked the required speed and altitude.

There were also high-performance airplanes. But these were small, lacked long-range and load-carrying ability.

The problem of combining both extremes in one airplane was put before America's aircraft industry. One company, Boeing, was in an exceptional position to meet the Army's requirements, because of its background of pioneering work in developing such four-engine airplanes as the B-17 Flying Fortress, the B-15 Bomber, the Stratoliner and the Pan American Clippers.

The Boeing design was accepted. And then, even before the first experimental model had been completed and tested, the Army committed the Boeing Superfortress to one of the greatest manufacturing programs ever placed behind any weapon of war!

Seldom has such engineering and production responsibility been given to *any* organization. It meant that the new plane *had* to be right; that no basic design changes could be made. It meant that Boeing had to work out the manufacturing plan of the B-29 at the same time it was completing the engineering design—and had to furnish full information about both to the companies which had been selected to help build it.

Success in planning and executing every step of the entire Superfortress program was imperative because of the important military plans built around it. Following the first B-29 operation, the Secretary of War said: "The new long-range bombers have overcome the tremendous barriers of distance to bring the heart of Japan under the guns and bombs of the Army Air Force."

When peace finally comes, Boeing principles of research, design, engineering and manufacture will again be applied to products for your use. True now, it will be equally true of any peacetime product . . . if it's "Built by Boeing" it's bound to be good.

DESIGNERS OF THE FLYING FORTRESS • THE NEW B-29 SUPERFORTRESS • THE STRATOLINER • PAN AMERICAN CLIPPERS **BOEING**

Navy dive bombers—about to strike! In each rear cockpit rides a radio gunner—trusted protector of his pilot and plane. His skill with radio and detection devices permits his pilot to concentrate on flying the plane and blasting the objective. His marksmanship makes enemy planes scarcer, brings V-day nearer.

Until that day comes, Western Electric's major job will be making huge quantities of radio and detection devices. As our forces strike farther and farther into the vast reaches of the Pacific, these electronic weapons become more important than ever.

The knowledge gained from equipping the fighting planes of today's World War is thus added to Western Electric's 75 year backlog of manufacturing skill and experience. This assures even finer communications equipment for the post-war aviation industry.

Buy all the War Bonds you can—and keep them!

75TH ANNIVERSARY

Western Electric

ARSENAL OF COMMUNICATIONS EQUIPMENT

ARMY E NAVY

RUST-P

RUST
PREVENTION
WITH TEXACO RUSTPROOFS
FREE! This 36-page booklet tells how Texaco Rustproof Compound prevents rust, where and how to apply it, and why it is so successful. Every industrial executive and engineer should have a copy. A single suggestion in this booklet may save thousands of dollars. Send for your copy today!

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TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT—CBS

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A RECONVERSION REQUIREMENT..

IMPORTANT in any plan for smooth, speedy reconversion to peacetime production is protection of unused equipment against destructive RUST. Government-owned equipment, according to official specifications, must be rustproofed with minimum delay after "shut-down". And if the equipment is your own, you will likewise wish to protect it fully until it is disposed of or put back in use.

In either case, you will find *Texaco Rustproof Compound* and other Texaco rust preventives *thoroughly effective*—for weeks or years—in protecting costly machines, precision tools, and other production equipment. These tested-in-use products meet Government specifications for *exterior* or *interior* application.

Easily applied with brush or spray gun, *Texaco Rustproof Compound* provides a penetrating, self-sealing film which is not only waterproof but also resistant to chemicals and fumes. It remains plastic, healing over any scratches and abrasions. It is long-lasting and extremely economical.

Texaco Rustproof Compound has proved highly successful in protecting all types of parts and equipment from weather and salt water in overseas shipments.

No matter what your rustproofing requirements—exterior or interior—there is a suitable Texaco rustproofing product to meet your needs, available to you through more than 2300 Texaco distributing points in the 48 States. *Order NOW!*

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Rustproofing Products

BS HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

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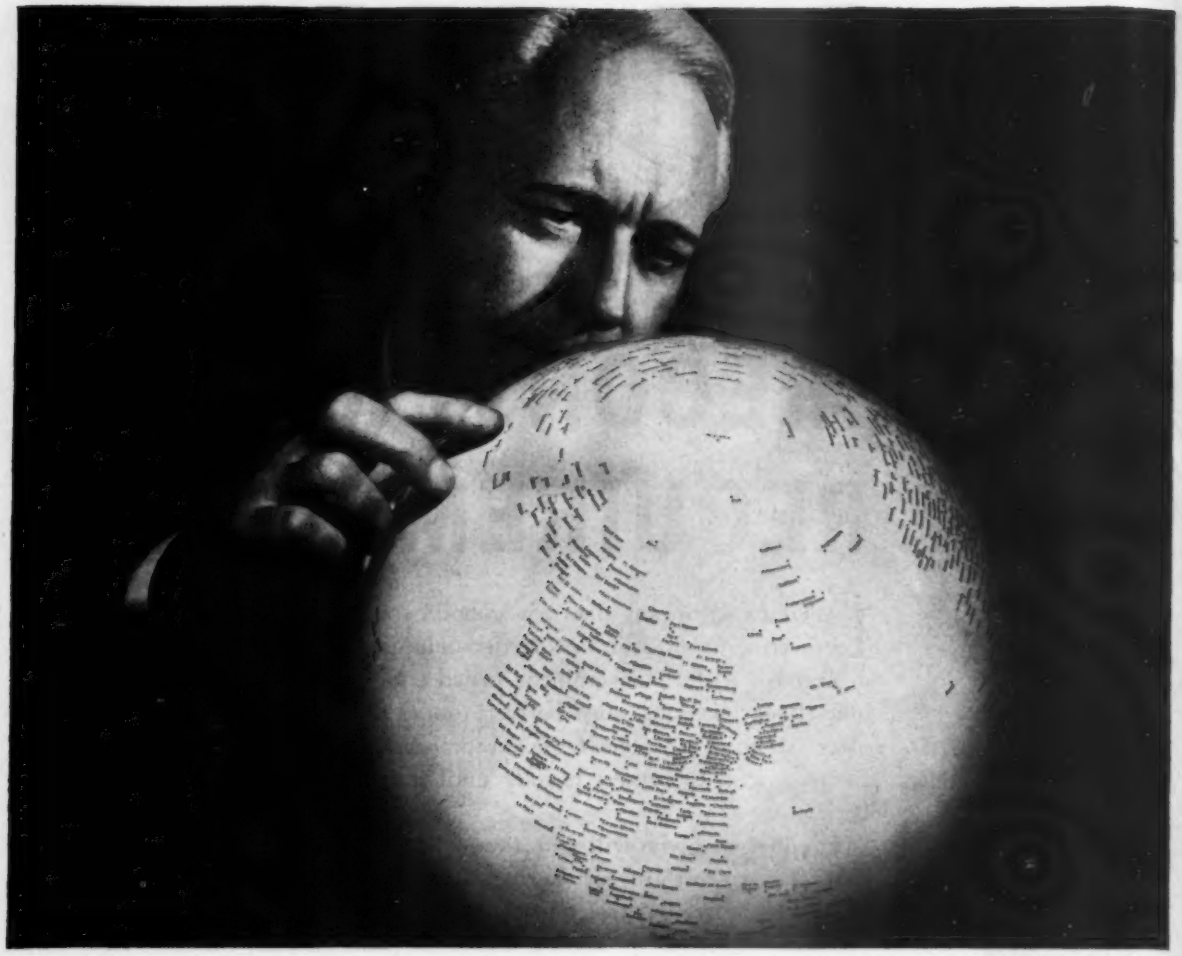

Air Globe, marketed by Rand McNally & Company

All Mother Earth's Children Live on the Same Street

NOTHING on earth matters except in terms of *people;* therefore, only people are represented upon this globe. Because we cannot name all of the earth's inhabitants individually, we show synonyms, the names of places *where* they live.

The important thing is that all of these places are upon the *one* highway of air . . . an endless, omnipresent thoroughfare. This elementary fact makes possible the greatest changes in the history of the human race.

Air transportation brings all of Mother Earth's children closely *together.* There are *land*locked nations, but there are no *air*locked nations, cities or individuals.

The better to visualize what this *means,* American Airlines introduces Air Globe, a new kind of globe that never can become obsolete. Mountains, oceans, arctics, deserts, jungles and other surface barriers, which long have kept people *apart,* have disappeared because air is available to everyone and permits swift transportation *above* the earth, everywhere. The innumerable boundary and dividing lines found upon maps of the earth's surface also are omitted, because air, itself, is indivisible, and plays no favorites.

Global air transportation presents new *national* opportunities and problems. Also new *personal* ones—as personal as the air we breathe.

To meet our country's needs, American Airlines expanded its service into Canada and Mexico; now we are ready to meet our obligation also to provide American's standard of air transportation *overseas.*

The operation of our regular Flagship schedules is the specific responsibility of American Airlines. Our generic duty is to interpret the importance of air transportation and apply it to our nation's prosperity and *security.*

AMERICAN AIRLINES *Inc.*

THE NATIONAL AND INTERNATIONAL ROUTE OF THE FLAGSHIPS

Vol. 8 No. 11
Nov. 1, 1944

American Aviation

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10,397
This Issue

Largest Air Conference in History Opens

Setting Up Provisional Global Routes At Top of Agenda for Vital Meeting

By Eric Bramley

THE LARGEST and most important conference ever called to deal specifically with problems of international aviation opened in Chicago Nov. 1.

Acceptances were being received by the State Department from practically every country invited. Attendance of more than 50 countries seemed assured. There was only one country, Saudi Arabia, that might not be able to send a representative.

Not since 1919 has there been a worldwide conference to consider problems of such magnitude, and some State Department experts state that the Chicago meeting will be of more importance than that held in Paris 25 years ago. Out of that meeting came the Paris Convention of 1919.

At the top of the agenda of the Chicago conference is the establishment of provisional air routes throughout the world. It is the hope of U. S. delegates that almost all of the work on this provisional route pattern can be done at the conference—the routes laid out, agreement reached on necessary landing and transit rights. This would leave comparatively few problems to be solved on this point after adjournment of the conference, although bilateral exchanges of notes may be necessary to confirm the agreements reached.

How far the conference can go toward adoption of a new multilateral air navigation convention, and formation of a permanent international aeronautical body is anybody's guess. Some experts hold to the belief that much work on this subject can be done at the conference; others disagree. One of the big points on which disagreement is expected is the permanent international aeronautical body—whether it shall control frequencies etc. The British made it clear last fortnight (see Column 2) that they favor an international body with broad powers, including the power to control frequencies. This does not coincide wit hthe U. S. view.

For these reasons, it is probable that about all the conference will be able to do will be to arrive at a set of principles which will be considered by a committee of the Interim Council. It is proposed to establish such a Council to act as the clearing house and advisory agency during the transitional period. One committee of this Council will work on the convention and the international body and would be the group to receive any principles arrived at by the conference. Conceivably, no agreement may be reached by the conference on certain points—frequencies, for example—and such questions might be turned over to the committee for further study. This study could take a long time.

However, the most important piece of business before the conference—the one on which immediate action is necessary—is the establishment of provisional air routes. Of two vital problems (routes and a new convention), the routes must get first consideration. The convention can be the subject of longer deliberations, it is felt.

The White House announced the U. S. delegation to the conference as Adolf A. Berle, Jr., Assistant Secretary of State, who has conducted this country's bilateral air talks with a number of nations; CAB Chairman L. Welch Pogue; CAB Vice Chairman Edward P. Warner; Assistant Secretary of Commerce William A. M. Burden; Mayor F. H. LaGuardia of New York; Rear Adm. Richard E. Byrd; and four Congressional representatives, two from the Senate and two from the House: Sen. Josiah W. Bailey (D., N. C.), Sen. Owen Brewster (Rep., Me.); Rep. Alfred L. Bulwinkle (D., N. C.) and Rep. Charles Wolverton (Rep., N. J.).

Advisors to the delegation are John C. Cooper, Jr., vice president of Pan American Airways; Ralph S. Damon, vice president of American Airlines; Carleton Putnam, president of Chicago & Southern Air Lines; Col. H. R. Harris, Chief of Staff, Air Transport Command; Stephen Latchford, advisor on air law, Aviation Division, State Dept.; and Comdr. Paul Richter, USNR.

Consultants to the delegation are Assistant Secretary of the Navy for Air Artemus Gates; Assistant Secretary of War for Air Robert Lovett; Dr. J. C. Hunsaker, chairman, National Advisory Committee for Aeronautics; and Maj. Gen. C. R. Smith, Air Transport Command.

Secretary General is Stokeley W. Morgan, chief, Aviation Division, State Dept. Secretaries of the delegation are Livingston Satterthwaite, Civil Air Attache, American Embassy, London, and Joe D. Walstrom, assistant chief, Aviation Division, State Dept.

Railey Attache to France

Howard B. Railey, Civil Aeronautics Board liaison consultant, who has been working on international matters, has been named U. S. civil attache to France. He is not expected to leave for his post in Paris until after the international aviation conference.

British White Paper Favors International Air Authority

A NEW INTERNATIONAL air convention for the regulation of air transport, to be administered by an international air authority with broad powers, was proposed last fortnight in a British White Paper, issued in London.

The convention proposed by the British was broad in scope. Under it, the international authority would determine frequencies to be operated, distribute these frequencies between countries concerned, fix rates and perform many other functions.

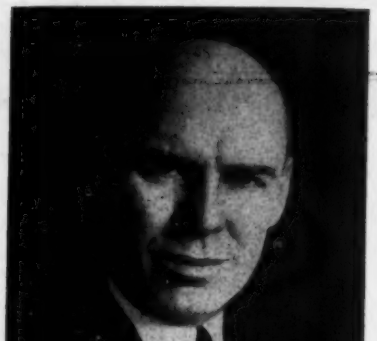
Because of its broad scope, the British plan is expected to be the subject of much discussion at the international aviation conference in Chicago. The U. S. has not favored the same degree of control advocated by the British, and the settling of these differences will receive much attention at the conference.

Complete text of the British White Paper follows:

For some time His Majesty's Government has been in consultation with other Commonwealth governments giving close attention to the general principles of post-war international air transport. The Canadian Government has published proposals and other Commonwealth governments have announced their views and now it is appropriate that His Majesty's Government should lay before Parliament the plan they favor.

Before the war the international regulation of civil aviation was concerned mainly with technical aspects, e.g., safety regulations. There was no single international convention commanding universal support. A convention for the regulation of air navigation (the Paris Con-

U. S. Delegation to World Meeting in Chicago



Senator Brewster

L. Welch Pogue

William A. M. Burden

Representative Wolverton

Mayor La Guardia

Edward P. Warner

Representative Bulwinkle

CAA and CAB Send 35

The CAA and CAB selected 35 technical and administrative employes to accompany the U. S. delegation to the international aviation conference. T. P. Wright, CAA Administrator, heads the CAA delegation which also includes Alfred S. Koch, Thomas B. Bourne, Fred M. Lanter, Ben Stern, Ray Nathan, James L. Kinney, Charles F. Dycer, Lloyd H. Simson, Kenneth Matucha, Paul I. David, Virginia Little, Erwin R. Marlin, Omer Welling, John T. Morgan, Douglas Crystal, R. B. Maloy, Alfred Hand, Eugene Sibley, Glen A. Gilbert, Harry G. Tarrington, and Albert A. Vollmecke. Those from the CAB are George C. Neal, Henry L. Hill, Harry Bowman, Howard B. Railey, William J. Madden, Melvin A. Brenner, Frederick C. Meitzer, and Harold Krellen. Robert W. Craig and Delbert M. Little of the Weather Bureau, and Paul A. Smith of the Coast and Geodetic Survey also were selected.

Senator Bailey

British White Paper Favors World Air Authority

(Continued from page 19)

vention of 1919) had been ratified by 33 states, but not including the United States, Union of Soviet Socialist Republics and China. The Convention embodied a doctrine of national sovereignty of the air, but each party granted the private aircraft of other member states, firstly, the right of innocent passage through air space excepting prohibited areas, and secondly, freedom of access to airdromes. The operation of regular commercial airlines was subject to the consent of the states through which the lines passed.

The United States ratified the Havana Convention of 1928 which was similar to the Paris Convention, but was limited to the American Continent and made no provision for technical international uniformity.

The major evils of the pre-war period were, firstly, that any country on an international air route could hold the operators of other countries for ransom, even if the latter only wished to fly over or refuel in its territory; secondly, that there was no means of controlling heavy subsidization of airlines which were often maintained for reasons of national prestige or as a war potential; and thirdly, that bargaining for transit and commercial rights introduced extraneous considerations and gave rise to international jealousies and mistrust.

His Majesty's Government wishes to see a radical change in this situation after the war. The potentialities of air transport are great; so also will be its influence for good or evil on international relations.

'Some Form of Collaboration'

The importance of international cooperation in other economic spheres has been recognized. It is no less important that air transport development should proceed on an enlightened international direction. The view of His Majesty's Government, as stated to Parliament on March 11, 1943, is "Some form of international collaboration will be essential if the air is to be developed in the interests of mankind as a whole, trade served, international understandings fostered and some measure of international security gained." The main objectives of such collaboration would be, firstly, to meet the needs of the peoples of the world for plentiful, efficient and cheap air services; secondly, to maintain broad equilibrium between the world's air transport capacity and traffic offering; thirdly, to ensure equitable participation by the various countries engaged in international air transport; fourthly, to eliminate wasteful competitive practices and control subsidies; fifthly, to standardize practice on technical matters important for the safety of flying; sixthly, to contribute to world security.

Proposes New Convention

His Majesty's Government proposes that a new convention should be drawn up to take the place of the Paris Convention and the Havana Convention and make provision for the regulation of international air transport. The convention would, firstly, reaffirm the principle of national sovereignty of the air and define what should for this purpose constitute the territory of a state, and secondly, define the degree of freedom of the air to be enjoyed by the ratifying states conditional on full acceptance of the rest of the convention. Subject to the right of each state to reserve its position in time of war or national emergency, its proposed freedom of the air should extend to (a) the right of innocent passage through the state's airspace; (b) the right to land for non-traffic purposes (e.g., refuelling, emergency, etcetera); (c) the right to disembark passengers, mails and freight destined for the country of origin of aircraft, (the right to pick up and set down traffic to and from destinations not in the country of origin of aircraft and the right to engage in cabotage of another country which would be a matter of negotiation). Thirdly, define international air routes which should be subject to international regulation; fourthly, provide for the elimination of uneconomic competition by the determination of frequencies (the total services of all countries operating on any international route), the distribution of those frequencies between the countries concerned and the fixing of carriage rates in relation to standards of speed and accommodation; fifthly, provide for the licensing of international air operators who undertook to observe the convention and abide by the rulings of an appropriate authority and for license withdrawal in the event of a breach of obligations; sixthly, provide for the denial of facilities to any unlicensed operator; seventhly, provide for the collection and review of information about the services, costs, subsidies, rates of carriage, landing fees, etcetera; eighthly, provide for the arbitration of disputes; ninthly, secure the acceptance by ratifying states of the obligation to provide in their respective territories the ground facilities needed for international services or allow such facilities to be provided; tenthly, prescribe safety regulations such as rules of the air, licensing of personnel and aircraft, ground signals, meteorological procedure (domestic airlines operating within territories of member states would not be governed by the convention but it is hoped they would voluntarily apply agreed standards); eleventhly, provide for standards on radio equipment, meteorological and ground facilities.

For the administration of the convention, it is proposed that an international air authority should be established and under it an operational executive with subsidiary regional panels and sub-commissions to deal with technical matters. The authority would in due course be placed in proper relationship to the world security organization and would consist of representatives of the ratifying states with voting powers to be determined on an equitable basis.

The composition of the operational executive and the procedure for selecting members are matters for further examination. The possibilities are (a) that members should be nominated in convention; (b) that they should be elected by the authority; (c) that they should be nominated by the major powers with provision for representation of the smaller powers.

Membership Restrictions

Membership of the regional panel would be confined to states with an interest in international air transport in areas for which the panel is responsible.

It would be the prime task of the authority to give effect to the provisions of the convention for the termination and distribution of frequencies and for fixing carriage rates in relation to standards of safety and accommodation. It would, for this purpose, work through the operational executive which would delegate its functions to the regional panels. Panel decisions would be subject to review by the executive, and of the executive by the authority.

In addition, the authority would firstly,

Selected to Assist American Delegation at Conference

Gates Russell Cooper Lovett Putnam Damon

administer the convention provisions governing such matters as safety standards and ground organization; secondly, prescribe the minimum requirements for international aerodromes and ancillary facilities, the provision of which would be the responsibility of the ratifying states.

Such, in broad outline, are proposals His Majesty's Government favors in the present circumstances for the ordering of post-war international civil air transport. The proposals are of a provisional nature and may be modified in the light of views expressed by other countries.

Aviation Calendar

Nov. 1—International civil aviation conference begins, Stevens Hotel, Chicago.

Nov. 9-10—Fall meeting, Institute of the Aeronautical Sciences, Engineering Society, Dayton, O.

Nov. 9-10—Society of Automotive Engineers, National Fuels & Lubricants meeting, The Mayo, Tulsa, Okla.

Nov. 13-14—Annual meeting National Assn. State Aviation Officials, Skirvin Tower Hotel, Oklahoma City.

Nov. 14—Meeting, board of directors, NAA, 12:30 p.m., Skirvin Tower Hotel, Oklahoma City.

Nov. 15—Oklahoma Civil Air Patrol, 4th war conference, Oklahoma City.

Nov. 15-18—Women's National Aeronautical Assn., national convention, Biltmore Hotel, Oklahoma City.

Nov. 15-18—National Clinic of Domestic Aviation Planning, Skirvin Tower Hotel, Oklahoma City.

Nov. 20—Air Industries & Transport Assn. of Canada, annual meeting, Mount Royal.

Nov. 28—Luncheon, Aviation Section, N. Y. Board of Trade, Hotel Astor.

Dec. 4-6—SAE National Air Cargo meeting, Chicago.

Dec. 5-7—Aircraft Distributors & Manufacturers Assn., 2d annual convention, Hotel Jefferson, St. Louis.

Dec. 6-7—National Aviation Trades Assn., annual convention, Jefferson Hotel, St. Louis.

Dec. 17—Institute of the Aeronautical Sciences, Eighth Wright Brothers' Lecture, U. S. Chamber of Commerce Auditorium, 5 p. m., Washington, D. C.

Jan. 8-12—1945 SAE annual meeting and engineering display, Book-Cadillac Hotel, Detroit.

Jan. 30-Feb. 1—Institute of the Aeronautical Sciences, 13th annual meeting, Pupin Physics Laboratory, Columbia Univ., New York. Annual honors night dinner at Waldorf-Astoria precedes meeting.

British Pilots Flying Jet Turbine Fighters

British pilots are flying an all-British jet turbine fighter, according to information released by Air Commodore Frank Whittle, designer of the original English jet propulsion plane. Commodore Whittle said the ship is an improved version, very fast and maneuverable. He said he had reason to believe it is a better plane than anything the Germans have yet produced.

The English designer said that in his opinion, bombers and air transports, as well as fighters, would be powered by jet turbine engines. He said he sees no reason why a jet turbine engine could not power the big Lancaster bombers as long as they operate at high altitudes.

'Civil Aviation and Peace' Expected to Stir Conference

Van Zandt Virtually Replies to British On World Planning

A NEW BOOK, "Civil Aviation and Peace," just published by the Brookings Institution, advocates full and unrestricted development of civil aviation, except in Germany and Japan, as the best guarantee for world peace. It is expected to be studied closely by delegates to the international aviation conference now being held in Chicago.

Although not written as an answer to the British White Paper on aviation, because the author, J. Parker Van Zandt, eminent aviation authority and writer, has been engaged in the work for nearly two years, the book is believed to reflect the majority opinion in U. S. aviation circles, which desires a minimum of international control as contrasted to British policy which seeks to set up an International Air Authority with broad administrative and enforcement powers. Under this Authority, a quota system is suggested for international air transport and the possibility exists that quotas might even be extended to production in the interests of maintaining balance between the nations of the earth.

Exceptionally well documented, the book is replete with information on the efforts of the past to regulate and control both military and civil aviation, particularly in Germany after World War I, and it assesses the reasons why, at the Washington Disarmament Conference of 1921-1922, the Committee on Limitation of Armament was of the opinion that "it is not at present practicable to impose any effective limitations upon numbers and characteristics of aircraft, either commercial or military." The author believes the same relative set of facts which led to the conclusions of 1921-1922 are even more compelling today.

Civil Aviation: Military Asset

Van Zandt develops the thesis that civil aviation, in practically all of its ramifications, is a powerful adjunct to a country's war-making potentiality, that international air transport is only a minor part of the civil aviation industry as a whole.

"We found that there are two fundamentally divergent schools of thought about the postwar role of civil aviation," he writes. "The first, or 'quota' group is preoccupied with the destructive possibilities which they see in civil aviation. Their principal concern is to prevent civil aviation from undermining future world security. Far from its contributing effectively to world peace, they fear that civil aviation is itself a menace to peace, unless brought under effective international control. They also hope by this means to control any troublesome commercial competitors."

Describing the second as the "maximum use" group, Van Zandt states that these aviation leaders see civil aviation not as a threat, but as a promise; an "open sesame" to a new world. They would, he states, develop to the full its marvelous peacetime possibilities. Attempts of the "quota" group to restrict civil flying as a security measure they regard not only as futile, but as positively harmful. In particular, they believe that the maximum development of international air transport offers a unique opportunity to promote the underlying conditions of peace.

Those who favor international restrictions, Van Zandt states, fail to appreciate that civil aviation is overwhelmingly domestic, on a world scale. International operations have obscured the less spectacular but dominant domestic aspects of the industry and have caused a confusion of a part with the whole.

Asserting that many assume civil aviation can be governed by control of international air transport alone, the author points out that "air power is the sum total of a nation's civil and military aviation resources . . . It is impossible to emasculate civil aviation of military significance—any more than the telephone or the birthrate. To seek a formula 'to prevent all possibility of the resources of civil aviation being used for military purposes' in event of war is unrealistic and futile."

Proposals for the international restriction of air power are worse than useless since they cannot be universally enforced, Van Zandt believes.

"Thus the end result would be to weaken peace-loving nations relative to potential aggressors, without effectively curbing war. The history of attempts at international control of either civil or military aviation is a tragic record of failure. Most current proposals for limiting air transport repeat the same old

The Brookings Institution

The Brookings Institution, a nonprofit corporation, was organized for scientific and educational purposes devoted to the public interest. It was founded largely by Robert S. Brookings, St. Louis business man, who retired in middle life to devote himself and his fortune to the public interest. A distinguished group of citizens, including university presidents, professional men, and business leaders, collaborated with him in the development of the institution. Its basic income is from endowment, although sale of publications produces a considerable income. The authors receive no royalties. J. Parker Van Zandt, author of "Civil Aviation and Peace" has been identified with aviation since youth. He resigned his commission from the U. S. Army when Gen. Mitchell was court martialed. Holder of degrees from four universities, Van Zandt is the author of many authoritative books and articles on aviation and has contributed articles to some of the leading aviation and scientific magazines.

errors and are counsels of despair," he states.

Restrictive measures toward international air transport would prove as impotent for defensive purposes as a Maginot Line. They would retard civil progress, restrict employment, and restrain the rapid expension of world trade, he contends.

Van Zandt believes that a crucial problem of international economic stability is to provide a sufficient supply of United States dollars abroad so that debtor countries will be able to serve their financial obligations and pay for our surplus products. He believes foreign travel, made possible by a new era in international air transportation, could be made an important instrumentality to accomplish this objective.

The author believes that a three-cent-per-passenger-mile fare would induce mass transportation on a basis that might develop in this country a billion dollars' worth of transport aircraft; a continuing program of scientific and engineering research; a healthy manufacturing industry; a billion miles or more of long-range flight training annually; a reservoir of skilled aviation personnel; and an air-minded citizenry in increasing numbers.

"For reasons of hard-headed common sense, democratic non-aggression countries should co-operate to the maximum practicable extent in such a program," Van Zandt states. "The civil airline services of such countries constitute in effect a kind of community reserve air transport pool, available for collective defense in time of common danger. . . . Hence the more aviation resources such essentially non-dangerous nations possess, the poorer the prospects of potential aggressors."

'World Air Network Needed'

Asserting that it is too early to predict what type of international force, if any eventually may be created to prevent aggression and to preserve the peace of the world, Van Zandt believes that some form of international organization will emerge from this war. However, he states that no matter what its form, nor how limited its initial scope, such an organization will need at its disposal a network of air routes over the world.

"At the very least, an international organization to be effective will need facilities for getting first hand information rapidly and accurately wherever trouble may arise," Van Zandt believes. "For such purpose a small force of 'World Air Mounties' might be formed—a kind of aerial equivalent of the Canadian Northwest Mounted Police, only on an international scale. To such agents of international government, serving as investigators, inspectors, or negotiators, the existence of a fully staffed and functioning air network, reaching into every corner of the globe, would be virtually indispensable."

Based on the record of the unsuccessful attempt to control military aviation in Germany, Van Zandt suggests that the victorious powers should: 1. Prevent the manufacture of aircraft and components of any type within Germany (or elsewhere under German domination if possible). 2. Prohibit Germans from operating scheduled air transport within Germany. 3. Prohibit German citizens from piloting aircraft of any type within Germany.

U. S. Technicians to Visit England To Seek Uniformity of Standards

A GROUP of technicians of the aircraft industry has left for England on a mission to study British industrial aircraft standard parts, practices and materials in an effort to bring about uniformity of standards for the American and British aircraft industries.

Members of the mission, which is being conducted under the direction of Flight Lieutenant D. G. Moffitt, RAF, of the British Air Commission, represent the National Aircraft Standards Committee and the Society of Automotive Engineers, and are returning a visit made to the United States by a British technical mission in May, 1943.

The United States mission includes T. P. Hearne, chairman of the International Standards Project of the National Aircraft Standards Committee, and standards engineer of the Ryan Aeronautical Co.; Eric Dudley, assistant to the director of engineering, Curtiss-Wright Corp., Airplane Division; Eugene W. Norris, director of technical services, Aeronautical Chamber of Commerce; J. D. Redding, manager, Aeronautical Department, Society of Automotive Engineers; L. D. Bonham, Materials and Processes Department manager, Lockheed Aircraft Corp.; and Gustav Carvelli, standards engineer, Wright Aeronautical Corp. Lt. Col. G. R. Gaillard, AAF, will represent the Working Committee of the Army-Navy Aeronautical Board, as an observer.

Flight Lieutenant Moffitt said that the group will study the British standards program at first hand, and seek a thorough understanding of their standards and application. This study will enable the industries of the two nations to harmonize their respective standards and practices more closely, and to achieve uniformity wherever that is possible.

Members of the mission are confident that the international standards program will effect substantial savings to the manufacturing industries and aircraft operators of both nations. It is expected that in addition to the economies effected through standardization, co-operation between the two countries will expedite conversion to civilian production and facilitate postwar international airline operations.

The mission will spend four to five weeks in England as guests of the British Ministry of Aircraft Production and the Society of British Aircraft Constructors. They will spend several days each at typical important aircraft centers and maintenance bases reviewing specifications and standards as affecting production, operation and service.

NASC-SAE Engineers to Fly to England— This group of technicians, representing the National Aircraft Standards Committee and the Society of Automotive Engineers, is shown leaving the headquarters of the British Air Commission in Washington after completing arrangements for an extended series of conferences abroad with British aircraft technicians. Left to right—Eugene W. Norris, Aeronautical Chamber of Commerce; Eric Dudley, Curtiss-Wright Corp., Airplane Division; Thomas P. Hearne, Ryan Aeronautical Corp.; James D. Redding, Society of Automotive Engineers; Gustav Carvelli, Wright Aeronautical Corp.; Flight Lieutenant Douglas G. Moffitt, RAF, British Air Commission; and L. D. Bonham, Lockheed Aircraft Corp.

The Brookings Institution book goes to source material for most of the facts upon which its conclusions are based. It projects possible air transportation growth based on comparisons with a similar growth dating from the early days of the automobile. The book contains numerous charts relating to all phases of aviation and transportation. It carries in the appendix a wealth of official material from the Washington Disarmament conference of 1921-1922, dealing with all phases of the discussions which were held at that time.

Kingfisher Knocks Down Zero

A Navy Chance-Vought Kingfisher observation plane recently shot it out with three Jap Zeros over Iwo Jima, knocking down one and escaping from the other two. The Kingfisher, designed for observation rather than combat, has only light machine guns. The latest Zeros carry heavy armament, are fast, and extremely maneuverable.

Passenger Pickup Airline Being Planned in Brazil

All American Gear and German JU52 Planes to be Used

THE SCENE of the first foreign commercial combination air passenger-pickup operation will be Brazil, the planes used will be German, and the pickup equipment American.

These facts were revealed to *American Aviation* by Charles Wendt, vice president and treasurer of All American Aviation Inc., which shortly will form a Brazilian company for the sale and servicing of AAA pickup equipment. Wendt, Mrs. Wendt and Mrs. Richard C. du Pont, widow of the former AAA president and a director of the company, recently made a trip to Rio de Janeiro to talk with Brazilian airline officials.

Services Aereos Cruzeiro do Sul Ltda., Brazilian airline which now operates some 11,000 route-miles, will fly Junkers JU52 tri-motored planes, equipped with All American's pickup gear. This German plane, designed many years ago, can get in and out of small fields easily, and has been widely used in South America. Some models carry 14 to 17 passengers. It is not known how many Cruzeiro intends to carry on the combination plane.

With this equipment, Cruzeiro intends to give mail and freight service to interior points which are now inaccessible because of lack of landing facilities. At least three JU52s and five single-engined Junkers will eventually be equipped with pickup gear.

For the last five years All American has operated an extensive mail-express pickup system in the U. S. but, due to lack of suitable flying equipment, has never instituted service in which passengers would be carried in the pickup plane. The company is convinced, however, that such service is practical, with the right kind of equipment.

All American is forming a Brazilian company, to be known as Aparelhos Aeronauticos All American S/A. This company, to be 51% American-financed and 49% Brazilian, will be a sales and servicing organization, and will not engage in airline operations. Through AAAA, Cruzeiro will be furnished with pickup equipment and technical assistance. All American employes, through AAAA, will assist in modification of the airplanes, training of pilots, and engineering.

Wendt believes that South America will be a big market for pickup equipment. The country is rich in natural resources, but there is no way of getting them out of the interior, he points out. He also believes that the use of gliders, which would be picked up by planes from fields too small for powered plane landings, offers almost unlimited possibilities. All American has been working on such a system, and it has been widely used by the Army Air Forces during the war.

Other countries, including England and Australia, are also interested in the All American pickup equipment, Wendt reveals.

Eighth Wright Lecture To Be Delivered Dec. 17 By John Stack of NACA

The Institute of the Aeronautical Sciences will hold its eighth Wright Brothers lecture commemorating the anniversary of the first flights of the Wright Brothers at Kittyhawk, N. C., Dec. 17 in the U. S. Chamber of Commerce auditorium, Washington, D. C. John Stack, senior aeronautical engineer of the Langley Memorial Laboratory of the National Advisory Committee for Aeronautics will speak on "Compressibility Effects on Modern High Speed Aircraft."

Visitors from Brazil—Senhor Roberto M. Taves (center), president of the Brazilian Transcontinental Airways, and Commander Ruy da Costa Gama (left), a member of the Brazilian Air Force and son-in-law of President Vargas of Brazil, recently toured Western Electric Company's Radio Division headquarters in New York. They were accompanied by H. N. Willets, commercial contract service manager of the Division.

Political Problems In World Aviation Tough, Says Burden

The International Aviation Conference will tackle problems falling into two main categories—technical and political, William A. M. Burden, Assistant Secretary of Commerce, said in a recent address before the American Association of Port Authorities in New York.

Burden observed that while technical problems are more complex, they are easy to solve when compared with problems of a political character. The need for international standarization on the technical side is fairly obvious when one considers the difficulties that would confront a pilot crossing Europe if the countries over which he flew used different systems of radio aids operating on different frequencies, or varying methods of presenting weather information, or different rules for approaching airports.

"As to the fear that air transport will cause economic friction, there seems no more reason to expect that competition between airlines will produce 'economic wars' than that competition in shipping or other forms of trade will produce the same results," he declared. "A substantial degree of competition between companies of different nationalities is not only inevitable in any international business, but is necessary if air services are to develop in a healthy fashion, to improve their techniques, and to serve the world public efficiently."

Attempting to forecast the volume of air travel in the postwar era, Burden said the transoceanic traveler in 1948 will travel between New York and London in 40 to 75-passenger, four-engine airplanes of the Douglas Skymaster and Lockheed Constellation types in 15 to 18 hours, at a berth rate of $250. He said there was no doubt but that the vastly increased speed and convenience of the new air services will result in a much greater amount of international travel.

Hawker 'Tempest' Taken from Britain's Secret List

GREAT BRITAIN has removed the RAF's Hawker Tempest from its secret list and is hailing the plane as successor to the Hurricane and Typhoon. Tempests have been especially effective against flying bombs, knocking down more than 600 of the pilotless craft to date, say the British.

Like its predecessor, the plane is a single seat, low wing monoplane, powered with a supercharged Napier Sabre engine of 2,200 hp, and has a De Haviland variable pitch four-bladed propeller. Armament consists of four 20 mm. cannons. The wing span is 41 ft., the length 33 ft., 8 in.

Looking somewhat like the Typhoon, but with the eliptical wing of the Spitfire and the high tail-fin rising from the fuselage in a curve similar to the Flying Fortress, the Tempest was first seen over England as soon as the robot attacks began. Tempests also are operating from Belgian bases against the Luftwaffe's swallow-tailed jetplane, the Messerschmitt 262.

The Tempest

Veteran British pilots say they find the speed and easy handling of the Tempest so remarkable that they find it easier to shoot down Fw. 190's and Me. 109's than robots.

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Today, these planes, nearing completion when the United States entered the war, have been maintaining year-round transatlantic schedules for over *two full years* under certificates granted by the Civil Aeronautics Board and in 100% cooperation with the U. S. Government. Vital to Victory, they have again and again cut the time required to deliver important "priority" passengers, mail and cargo over the United Nation's most crucial life-line...The latest record crossing, for example, was made in 15½ hours, La Guardia Field, New York to Ireland!

Such progress—still unmatched—is proof positive, you'll agree, that the way to American world air supremacy along commercial lines is through competition. Not for a moment do we believe that any one company, American Export Airlines included, has a "monopoly" on the brains, vision and general all-around experience needed to do the whole job and do it well!

Base Map from "The Geography of World Air Transport" by J. Parker Van Zandt, the Brookings Institution.

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• • •

Competition built America...made it great. Gaining world air supremacy for America calls for the same skill, vision and initiative the competitive spirit has always inspired in this Nation. Realizing this, a far-sighted Congress in 1938 passed the Civil Aeronautics Act endorsing the principle of regulated competition in overseas air transportation...and in 1940 American Export Airlines was granted certificates of public convenience and necessity to fly the Atlantic as the second company to enter this highly important field. Since then American Export Airlines' record-breaking achievements, even under war conditions, in bringing new speed, comfort and dependability to transatlantic air travel have proved the wisdom of that principle.

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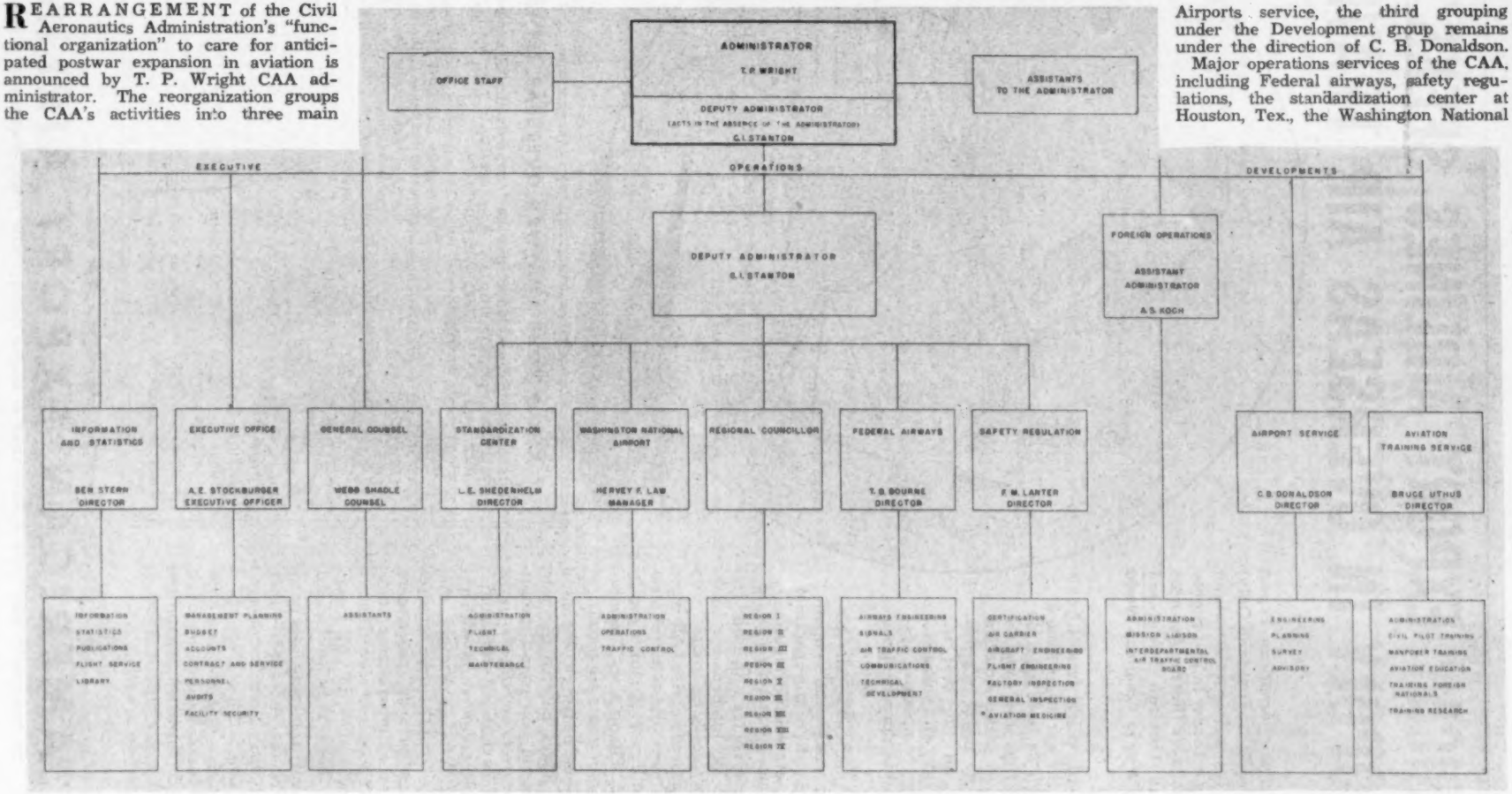
CAA Rearranges 'Functional Organization' for Postwar

REARRANGEMENT of the Civil Aeronautics Administration's "functional organization" to care for anticipated postwar expansion in aviation is announced by T. P. Wright CAA administrator. The reorganization groups the CAA's activities into three main services—administrative, operations, and development, the latter embracing two new divisions; aviation training service and foreign operations.



The division of foreign operations, headed by A. S. Koch, assistant administrator, has been established, Wright said, to take care of the expansion of domestic airlines abroad; the numerous requests received from foreign nations for technical advice and assistance; and the preparations involved in the conference and conventions with foreign nations in which the U. S. "is obligated to participate in keeping with the recognized worldwide role that civil aviation must assume."

The civil pilot training program, manpower training, the air education program, the training of foreign nationals and training research have been combined in the aviation training service with Bruce Uthus in charge as director.

Airports service, the third grouping under the Development group remains under the direction of C. B. Donaldson.

Major operations services of the CAA, including Federal airways, safety regulations, the standardization center at Houston, Tex., the Washington National Airport and a regional councillor to perform liaison between the nine regional offices and Washington, are grouped under the direction of Charles I. Stanton, deputy administrator. John E. Sommers, formerly assistant administrator, will go to New York to assume duties in the CAA regional office.

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Aerodynamic braking, another first by Curtiss, brings to the science of flight a new and significant development. The propeller, long the source of forward thrust in aircraft, now provides thrust in reverse to reduce the landing roll of the airplane smoothly and surely, regardless of ground friction. Aerodynamic braking, like many other features, is inherent in the versatile Curtiss design.

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6. Unassisted ground handling
7. Reduced tire and brake wear
8. Lighter brake system possible

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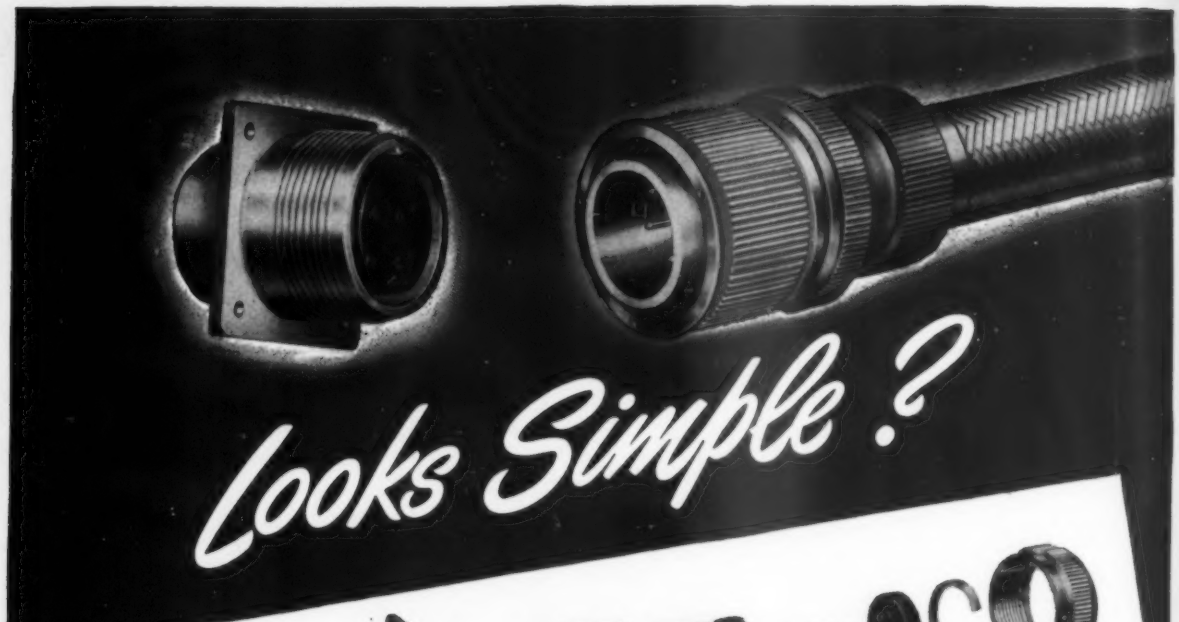

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PRODUCTION FOR VICTORY — PRODUCTS FOR PEACE

Chamber's Postwar Framework Composed of Industry Leaders

Committees Busy On Termination and Reconversion

THE AERONAUTICAL Chamber of Commerce, moving steadily toward its objective of serving as the unified voice of the aircraft industry in reconversion and termination matters and in postwar operations, has completed its organizational framework and has set up its major standing committees with representatives from all segments of the industry.

The ACCA during the last fortnight was active along numerous lines, while continuing to set its broad organizational machinery into motion.

Specific problems included the ascertainment of industry viewpoint relative to establishment of an aircraft industry division in the War Production Board, industry's participation in an advisory capacity in the forthcoming international air conference, development of a policy for future air shows, continued study of termination problems, and similar pressing current issues.

Manager Scott Russell attended meetings of the ACCA's Manufacturers Council in Los Angeles and New York during the fortnight as he began to get his executive program into gear. Nominated to the Board of Governors and Executive Committee to succeed the late P. G. Johnson was Claire L. Egtwedt, acting president of Boeing Aircraft Co. In the West Coast office announcement was made of the appointment of Frank E. Ross as assistant to James L. Straight, western regional manager. Ross for the past year had been director of information for the Aircraft War Production Council.

Organization of ACCA standing committees to date was announced as follows:

INDUSTRIAL RELATIONS COMMITTEE: Leston P. Faneuf, (John Meade, alternate), Bell Aircraft Corp.; Marvin A. Heidt, Bendix Aviation Corp.; C. E. French, (F. D. Weaver, alternate), Boeing Aircraft Co.; F. A. Lauerman, (I. R. Becht, alternate), Consolidated Vultee Aircraft Corp.; I. L. Willis, Curtiss-Wright Corp.; A. M. Rochlen, (A. C. Galbraith, alternate), Douglas Aircraft Co.; S. A. Angotti, (J. F. Stengel, alternate), Fairchild Engine & Airplane Corp.; W. W. Aulepp, Lockheed Aircraft Corp.; D. W. Siemon, (C. E. Crowley, alternate), The Glenn L. Martin Co.; M. E. Beaman, North American Aviation, Inc.; G. L. Sterling, Jr., Northrop Aircraft; C. Hodge, Republic Aviation Corp.; W. Frank Persons, Ryan Aeronautical Co.; Andrew J. Percival, (E. Shoemaker, alternate), Sperry Gyroscope Co.; M. F. Burke, United Aircraft Corp.; C. J. Brukner, The Waco Aircraft Co.

TRADE DEVELOPMENT COMMITTEE: Richard E. Posthauer, The Aviation Corp.; Harry E. Collins, Bell Aircraft Corp.; Leroy Kiley, Bendix Aviation Corp.; F. B. Collins, (E. E. Miller, alternate), Boeing Aircraft Co., R. F. C. Taylor, Consolidated Vultee Aircraft Corp.; W. J. Crosswell, Curtiss-Wright Corp.; J. M. Rogers, (Nat. Paschall, alternate, Douglas Aircraft Co., Inc.; Dean C. Smith, (Neil B. Berboth, alternate), Fairchild Engine & Airplane Corp.; Leonard K. Schwartz, Lockheed Aircraft Corp.; H. G. Mosier, (R. L. Sansbury, alternate), The Glenn L. Martin Co.; R. L. Burla, North American Aviation, Inc.; T. C. Coleman, Northrop Aircraft, Inc.; A. T. Hopke, (G. C. Sleeper, alternate), Republic Aviation Corp.; S. C. Breder, Ryan Aeronautical Co.; A. R. Weckel, (Wood Henry, alternate), Sperry Gyroscope Co., Inc.; H. M. Horner, United Aircraft Corp.; C. J. Brukner, The Waco Aircraft Co.

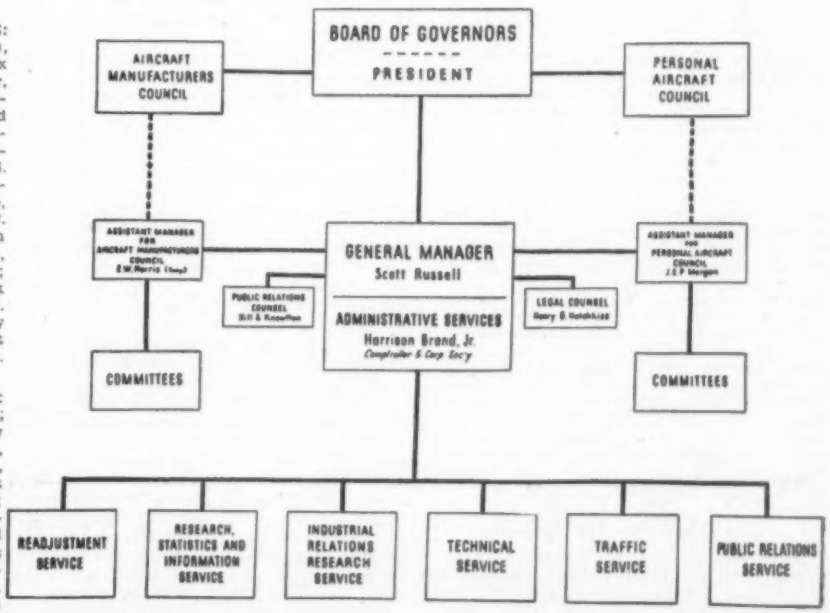
RESEARCH AND STATISTICS COMMITTEE: Harvey Gaylord, Bell Aircraft Corp.; Harold E. Sweeney, Bendix Aviation Corp.; J. O. Yeasting, (F. W. Neale, alternate), Boeing Aircraft Co.; H. W. Martin, Consolidated Vultee Aircraft Corp.; Dr. C. C. Furnas, Curtiss-Wright Corp.; Glenn Wingard, Douglas Aircraft Co., Inc.; Joseph J. Mehl, Fairchild Engine & Airplane Corp.; Paul A. Sexson, Lockheed Aircraft Corp.; M. R. Schermerhorn, Jr., (W. V. Clark, alternate), The Glenn L. Martin Co.; N. S. Houston, North American Aviation, Inc.; T. C. Coleman, Northrop Aircraft, Inc.; A. T. Hapke, (G. C. Sleeper, alternate), Republic Aviation Corp.; F. J. Rossoll, Ryan Aeronautical Co.; John H. Payne, (Wood Henry, alternate), Sperry Gyroscope Co., Inc.; R. E. Beach, United Aircraft Corp.; C. J. Brukner, The Waco Aircraft Co.

CONTRACT TERMINATION COMMITTEE: W. A. Mogensen, The Aviation Corp.; C. L. Beard, (W. C. Lindsay, alternate), Bell Aircraft Corp.; Charles Hummel, Bendix Aviation Corp.; H. E. Bowman, (L. R. Allen, alternate), Boeing Aircraft Co.; V. C. Schorlemmer, (L. K. Grant, alternate), Consolidated Vultee Aircraft Corp.; R. J. Lindquist, (M. Standish, alternate), Curtiss-Wright; Karl P. Grube, (W. A. Foy, alternate), Douglas Aircraft Co.; W. H. Schwebel, (J. J. Mehl, alternate), Fairchild Engine & Airplane Corp.; James J. Norton, Lockheed Aircraft Corp.; M. R. Schermerhorn, Jr., (H. G. Mosier, alternate), The Glenn L. Martin Co.; C. J. Gallant, (B. A. Barre, alternate), North American Aviation; H. W. Cohu, Northrop Aircraft; A. H. Peck, Republic Aviation Corp.; J. C. Noakes, (G. C. Woodard, alternate), Ryan Aeronautical Co.; W. F. Titus, (David Reisman, alternate), Sperry Gyroscope Co.; J. F. McCarthy, United Aircraft Corp.; R. E. Hoefflin, The Waco Aircraft Co.

TECHNOLOGICAL DEVELOPMENT COMMITTEE: W. A. Plourde, (Frank H. Kelley, Jr., alternate), Bell Aircraft Corp.; Charles Marcus, Bendix Aviation Corp.; W. E. Beall,

Plane 'Foxholes'—Before the recent hurricane hit Lakeland, Fla., attendants at the Lodwick School of Aeronautics wheeled 150 Boeing Kaydet trainers off the apron and sunk their wheels in holes which had been dug in the soft sand nearby. To break the airflow, two-by-four 'spoilers' were attached to the wings (see lower wing at right). The planes rode the storm with only minor damage.

Chart Shows Aero Chamber's New Set-up Of Policy, Operations, and Services



(E. C. Wells, alternate), Boeing Aircraft Corp.; I. M. Laddon, (F. A. Learman, alternate), Consolidated Vultee Aircraft Corp.; C. W. Loos, Curtiss-Wright Corp.; A. E. Raymond, (E. F. Burton, alternate), Douglas Aircraft Co.; Dean Smith, Fairchild Engine & Airplane Corp.; Lucien W. Shaw, Lockheed Aircraft Corp.; H. G. Mosier, (R. L. Sansbury, alternate), The Glenn L. Martin Co.; R. H. Rice, North American Aviation Inc.; R. A. Dutton, Northrop Aircraft; H. Lehne, Republic Aviation Corp.; T. Claude Ryan, (W. O. Locke, alternate), Ryan Aeronautical Co.; Maj. Gen. Follett Bradley, (Dr. W. L. Barrow, alternate), Sperry Gyroscope Co.; H. M. Horner, United Aircraft Corp.; C. J. Brukner, The Waco Aircraft Co.

ACCOUNTING COMMITTEE: W. A. Mogensen, The Aviation Corp.; J. S. Schumann, (W. C. Lindsay, alternate), Bell Aircraft Corp.; W. H. Houghton, Bendix Aviation Corp.; H. E. Bowman, (J. O. Yeasting, alternate), Boeing Aircraft Co.; F. A. Callery, (P. A. Hewlett, alternate), Consolidated Vultee Aircraft Corp.; R. J. Lindquist, Curtiss-Wright Corp.; R. V. Hunt, (Glenn Wingard, alternate), Douglas Aircraft Co., Inc.; W. H. Schwebel, (J. J. Mehl, alternate), Fairchild Engine & Airplane Corp.; L. W. Shaw, Lockheed Aircraft Corp.; M. R. Schermerhorn, (E. R. Uhlig, alternate), The Glenn L. Martin Co.; S. G. Anspach, North American Aviation, Inc.; C. N. Monson Northrop Aircraft, Inc.; J. J. Ryan, (A. Pieper, alternate), Republic Aviation Corp.; J. C. Nookes, (G. C. Woodard, alternate), Ryan Aeronautical Co.; J. A. Tarrant, (Wood Henry, alternate), Sperry Gyroscope Co., Inc.; J. F. McCarthy, United Aircraft Corp.; C. J. Brukner, The Waco Aircraft Co.

PUBLIC RELATIONS COMMITTEE: A. W. Gratop, The Aviation Corp.; S. E. Fitzgerald, Bell Aircraft Corp.; H. L. Sharlock, Bendix Aviation Corp.; Harold Mansfield, Boeing Aircraft Co.; E. A. Hoose, (John B. Avery, alternate), Consolidated Vultee Aircraft Corp.; J. W. Sweetser, Curtiss-Wright Corp.; A. M. Rochlen, Douglas Aircraft Co., Inc.; J. E. Lowes, Jr., (H. A. Hershfield, alternate), Fairchild Engine & Airplane Corp.; J. A. Wales, Jr., Fairchild Engine & Airplane Corp.; W. L. Wilson, Kellett Aircraft Corp.; J. E. Canady, Lockheed Aircraft Corp.; Avery McBee, (H. S. Gordon, alternate), The Gleen L. Martin Co.; L. R. Taylor, North American Aviation, Inc.; Dale Armstrong, Northrop Aircraft, Inc.; G. C. Sleeper, Republic Aviation Corp.; W. Wagner, (K. Monroe, alternate), Ryan Aeronautical Co.; J. A. Fitz, (W. T. Henry, alternate), Sperry Gyroscope Co., Inc.; L. D. Lyman, United Aircraft Corp.; C. J. Brukner, The Waco Aircraft Co.

SURPLUS MATERIEL AND FACILITIES COMMITTEE: B. M. Smarr, The Aviation Corp.; R. C. Epstein, Bell Aviation Corp.; E. R. Breech, (H. E. Sweeney, alternate), Bendix Aviation Corp.; F. B. Collins, (E. E. Miller, alternate), Boeing Aircraft Co.; F. A. Callery, (P. A. Hewlett, alternate), Consolidated Vultee Aircraft Corp.; J. C. Willson, (W. F. Goulding, alternate), Curtiss-Wright Corp.; Gordon D. Brown, (on leave), (Nat Paschall, alternate), Douglas Aircraft Co., Inc.; C. D. Smith, (Neil B. Berboth, alternate), Fairchild Engine & Airplane Corp.; Robert E. Gross, (Lucien Shaw, alternate), Lockheed Aircraft Corp.; H. G. Mosier, (W. K. Ebel, alternate), The Glenn L. Martin Co.; C. J. Gallant, North American Aviation, Inc.; Perry Ogden, Northrop Aircraft, Inc.; M. I. Peale, (A. T. Hapke, alternate), Republic Aviation Corp.; W. O. Locke, (R. T. Kelly, alternate), Ryan Aeronautical Co.; John W. Payne, (Wood Henry, alternate), Sperry Gyroscope Co., Inc.; H. M. Horner, United Aircraft Corp.; C. J. Brukner, The Waco Aircraft Co.

New Quarters for School

American School of Aircraft Instruments has established new classrooms, shops and laboratories at 5245 W. San Fernando Rd., Los Angeles (26), Calif.

Regulations Covering Rotor-Type Aircraft Prepared by CAB Bureau

Safety Unit Submits Suggested Rules to Industry's Leaders

THE CAB'S Safety Bureau soon is expected to submit for final approval a set of civil air regulations covering rotorplanes. The suggested regulations have already been circulated to the industry and replies are currently being compiled by the Aeronautical Chamber of Commerce. These replies will be given consideration in the final draft of the regulations.

In circulating the proposed regulations to the industry, the Safety Bureau pointed out that "the introduction of the practical helicopter as a new type of rotorplane has made it desirable that standards be established for such type of aircraft." Generally, the proposed regulations have been patterned after those now in force on conventional types of aircraft, but the Safety Bureau also noted that "the experience gained on requirements for the autogiro has been of great value in the establishment of airworthiness requirements of rotorplanes."

The 20 pages of proposed regulations actually cover three types of aircraft—the rotorplane, helicopter and gyroplane. The rotorplane is defined as "any aircraft deriving its principal lift from rotors; the helicopter as "a rotorplane which depends entirely for its support and motion in the air upon the lift generated by one or more power-driven rotors," and the gyroplane as "a rotorplane which depends principally for its support upon the lift generated by one or more rotors which are not power driven, except for initial starting, and which are caused to rotate by the action of the air when the rotorplane is in motion."

The regulations, which are set as Part 06 of the CAR, sets up under strength criteria these structural tests for rotorplanes: (a) dynamic and endurance tests of rotors and rotor drives, including controls, (b) control surface and system tests, (c) vibration surveys, (d) landing gear drop tests, and (e) "such additional tests as may be required to substantiate new and unusual features of the design."

Another section states that "the airworthiness rating of a rotorplane with respect to its strength will be based on the airspeeds, rotor speeds, and load factors which can safely be developed in combination . . . " An additional strength criterion will be an ability to withstand gust conditions up to 30 feet per second velocity "in conjunction with the critical rotorplane airspeeds, including hovering."

"The landing gear shall be capable of absorbing the energy of a free drop from a height of not less than 20 inches measured from the bottom of the tires to the ground," another section states. "The weight of the rotor blades may be neglected in the drop tests." The aircraft must be capable of seat loads of 170 pounds per passenger and safety belt loads capable of withstanding an ultimate load of 1,000 pounds per person.

Under the section dealing with detail design and construction, the regulations state that "the primary structure and all mechanism essential for the safe operation of the rotorplane shall incorporate design details which experience has shown to be reliable, and the suitability of such design details shall be established."

Minimum equipment requirements for rotorplanes were set forth as follows: one airspeed indicator, one altimeter, a tachometer for the main rotor, or for each main rotor, the speed of which can vary with respect to another main rotor; a tachometer for each engine, an engine oil-pressure gauge when the engine employs a pressure oil system, a coolant thermometer for each liquid-cooled engine, an oil-inlet temperature thermometer, a manifold pressure gauge for each altitude engine, a fuel quantity gauge, certificated safety belts for all passengers and members of the crew, fire extinguishers, a device to measure oil in the tanks, and a first-aid kit.

The proposed regulations provide that the engine or engines "shall be of a type which has been type certificated or otherwise found eligible for use in certificated aircraft," and stipulate that "the rotor drive mechanism shall incorporate a unit which will automatically disengage the rotor drive and engine from the main and auxiliary rotors in the event of power failures."

100-Hour Tests

Tests of not less than 100 hours are required for the rotor drive and control mechanism, the regulations point out.

"The test shall be conducted on the rotor plane and the power shall be absorbed by the actual rotors to be installed," they stipulate, "except that the use of other ground or flight test facilities with any other suitable method of power absorption will be considered satisfactory provided all conditions of support and vibration closely simulate the conditions that would exist during a test on the actual rotorplane."

As to general performance, the regulations state. "All rotor planes shall have such performance and flight characteristics as to provide reasonable safety during the execution of any maneuver appropriate to, or necessary for, the aircraft and during steady flight at any weight, center of gravity position, speed, and power within the ranges for which the aircraft is certificated. Compliance with all performance requirements shall be demonstrated by suitable flight tests conducted by the applicant and witnessed by a representative of the Administrator of Civil Aeronautics or, at his discretion, conducted by that representative."

"It shall be possible to make a safe landing with all power off," the regulations conclude.

Award PAA Travel Fellowships

Pan American Airways fellowships for the academic year 1944-45, providing for gratuitous air transportation to the United States and return, have been awarded to nine Latin American students. The Pan American fellowships were established in 1937 in line with the Good Neighbor Policy of the United States government.

Buried Treasures

... to Serve the South

Rivers of "black gold" gushing up from substratum sand ... fields of derricks ... thousands of miles of pipelines to hungry industry.

This, too, is a part of the Southern scene. For the South is oil country, supplying better than 61 per cent of all our crude to yield synthetic rubber, glycerine, alcohol, plastics, cosmetics, medicines, dyes, explosives, paints, textiles and a thousand other products, including oil for America's millions of motors.

Southern oil is a powerful industrial magnet. To the business planner it is a means to economical, profitable production. And it is a contributing factor to the amazing postwar prospects in other Southern industries—steel, textiles, mining, chemistry, timber, agriculture.

Remember, too, the South's great store of natural gas. The Southland originates 73 per cent of the nation's total supply. Annual consumption in the South alone is valued at more than $210,000,000.

Delta Air Lines planes cross and recross these areas of fabulous buried treasure. Its service to the oil and gas industries reach back 20 years. And Delta Air Lines sees its future as an enviable one—growing steadily in service to a richly-endowed, steadily advancing Southland.

THE AIRLINE OF THE SOUTH ... SERVING A LAND OF POWER AND PROMISE

DELTA Air Lines

Local Capital for Airports Urged As Means to Avoid Bureaucracy

Government-Aided Fields Seen Facing Threat of Bondage

THE PREMISE that commercial air terminals must be publicly owned was criticized by Glen B. Eastburn, vice president of the National Aeronautic Association and manager of the Los Angeles Chamber of Commerce transportation department, in a speech at Kansas City during the fortnight.

Eastburn, addressing the war conference of the National Association of Commercial Organization Secretaries on "Chamber of Commerce responsibility to Aviation," declared "it is my opinion that air transportation companies will own, individually or cooperatively, their own terminals within a few years or will regret they do not own them.

"Most of us have assumed that airports must be provided by the public at taxpayers' expense, despite the fact that history is full of examples of enterprises, launched with government help, which lived to regret bureaucratic bondage that stifled initiative and limited management's opportunity. Therefore, we should explore the possibility of interesting local capital in construction of needed air terminals and airparks."

Airports 'Immediate' Need

Eastburn stressed that aviation needs three factors to enable it to perform the services of which it is capable—places to land, passengers and commerce to carry, and able business management to make its operation economically sound. Development of adequate ground facilities as a foundation upon which the industry will build was described as the most immediate task for a chamber of commerce.

Eastburn touched upon the contract carrier, stating, "we have a potential factor in the international field, that of the tramp plane, which may develop a function similar to that of the tramp steamer which has been an important element in international trade since such trade existed. With a tremendous surplus of cargo planes after the war, many will fall into hands of owners not subject to the control of our government, who will be ready, willing and able to fly to any part of the world to which they can get a satisfactory cargo.

"The contract carrier inside the United States as well as outside is a problem we must recognize and his services should not jeopardize scheduled transportation. In those regions where scheduled operations are not feasible the contract carrier will render useful service."

Cites Chamber's Responsibility

The Los Angeles manager pointed out that chamber of commerce responsibility to aviation is the same as to any other developing phase of national and community economy, and summarized those responsibilities as:

1—Let chambers cut out crystal gazing and get down to facts.

2—Mobilize the economic data of the city for use in supporting aviation development.

3—Find what commercial air service can be justified.

4—Go after needed service with established or new operators.

5—Determine the kind of facilities required for private flying.

6—Know the laws, regulations and provisions of airport construction and flight operations.

7—Seek to keep alive individual initiative and private responsibility in aviation.

Rides at $1 Per Person Christen Kansas Field

"Try your wings—rides $1 per person!"

That sounds like shades of the past, but it still has popular appeal, as evidenced by the activity of sightseeing planes at the opening of Lakeside Airport, Marion, Kan., Oct. 15.

Pilots from many parts of Kansas were invited to fly to Marion for the celebration, and to make expense money were privileged to take up passengers at $1 per person.

1st CAB Case Before Supreme Court Ends Favorable to Board

The first case ever carried from the Civil Aeronautics Board to the U. S. Supreme Court has ended in the high court's upholding CAB's suspension of a United Air Lines pilot's license for acrobatics performed in an Army B-25 bomber. The violation occurred over the Indianapolis Municipal Airport on January 20, 1943.

Previously the Board's action had been upheld in the 7th Circuit Court of Appeals after which Leland H. Cameron, the UAL pilot, appealed for a writ of certiorari to the U. S. Supreme Court. This petition for the writ has been denied.

The Board suspended the pilot's airline license for 30 days for flying a B-25 acrobatically within 100 feet horizontally of the Indianapolis airport, including a power dive and a steep climbing turn over airport buildings, in violation of Sections 60.700 and 60.3503 of the Civil Air Regulations.

In another case, Board authority recently was upheld by the U. S. Circuit Court of Appeals, District of Columbia, when the court affirmed the Board's 90-day suspension of the pilot certificate of Pierce P. O'Carroll, charter service operator of Chicago. O'Carroll was found guilty of taking off from an airport when there was imminent danger of collision with other aircraft.

At Macon Clinic— These three aviation leaders participated in the Georgia Aviation Clinic recently held in Macon. Left to right—J. Wendell Coombs, president of the Aeronautical Training Society; Lowell Swenson, manager of the National Aeronautic Association; and John Wilson, manager of the National Aviation Trades Association.

Urges Civilian Pilot Trainees Take Course In Aviation Medicine

Aviation medicine should be one of the subjects included in a curriculum of training for civilian pilots, according to F. R. Steggerda, associate professor of physiology at the University of Illinois.

In an outline of a course of study for the seeker of a private pilot's license, Dr. Steggerda suggested that he be taught something of the dangers of prolonged exposure to low temperatures; oxygen deficiency, fatigue, anxiety, and alcoholism; possible dangers of blackout, or of a "red out," and of contracting serious ear and sinus infections by flying with infectious colds.

While civilian flying does not normally present the extreme factors of altitude, temperature, accelerations and fatigue such as the military pilot may encounter, such training will nevertheless aid the private pilot to recognize and understand some of these problems.

"People of all ages and degrees of physical impairment desire to fly," Dr. Steggerda said. "They have the inherent right to do so, unless it threatens their safety and that of others.

"The future of the aircraft industry depends largely upon the ability of engineers to provide inexpensive, reliable and simple-to-operate aircraft for this mass of potential personal fliers. They must fit the machines to certain economic and personal limitations."

Distinguished Service Medal Awarded Hardin

Brig. Gen. Thomas O. Hardin has been awarded the distinguished service medal for developing the aerial "lifeline" to China. General Hardin until recently commanded the India-China Wing of the Air Transport Command and under his direction the tonnage flown over the hump steadily increased.

He was awarded the distinguished flying cross in March, 1943, for pioneering air transport and combat air support operations in Africa and the Middle East during the time when he was operations officer of the Africa-Middle East Wing of the ATC. He also wears the air medal.

Checking strut in Drop Test Rig

Testing brake power on 30-ton dynamometer

YOU take no chances because WE take none with BENDIX LANDING GEAR

From blueprint to bomber, fighter, or transport plane, Bendix landing gear is under the constant supervision of men with the broadest experience in this highly specialized field.

One outstanding advantage provided by this experienced personnel is the forethought shown at every stage. Strains, shocks and performance requirements are accurately foreseen—and the ability of the landing gear to meet them is predetermined in a series of practical tests in the best-equipped laboratories available anywhere.

Trustworthy—that sums up the dominant characteristics of this fine product of Bendix Creative Engineering. For proof, simply check the list of manufacturers who rely on Bendix landing gear for safer, easier take-offs and landings.

BENDIX LANDING GEAR—Bendix Pneudraulic Shock Struts, Bendix Airplane Wheels, Airplane Brakes, Hydraulic Master Cylinders, and Power Brake Valves make up the list of Bendix Landing Gear equipment.

Bendix PRODUCTS DIVISION

BENDIX AVIATION CORPORATION, SOUTH BEND 20, INDIANA

CAA Declares 110 Military Craft Eligible for Civil Certification

Nearly Half of Total Tested Are Douglas And Beechcraft Types

THE Civil Aeronautics Administration, carrying forward its testing program on surplus aircraft in conjunction with the Defense Plant Corp., has declared 110 military types of aircraft, including four gliders, eligible for civil certification. Nearly half of the military types are Douglas and Beechcraft models.

In addition, the CAA announced, eight models have been tested at Vandalia, O., and an additional three models will be tested shortly. Following are the results on some of the aircraft being tested for civil use:

Naval Aircraft Factory N3N-3: Eligible for certification provided certain modifications are accomplished.

Fairchild PT-23: Not eligible at present. However, Fairchild is arranging to correct the features which stand in the way of approval.

Republic AT-12: Tested and found ineligible for certification on the basis of flight characteristics.

North American O-47B: Tested and found ineligible for approval at present. However, this airplane is being studied further and may be eligible with some modification.

Boeing C-73: This is similar to a Boeing 274D except for power plant changes which have been found satisfactory, making the plane eligible for certification.

Cessna C-78: Tested and found ineligible for certification. However, arrangements are being made for Cessna to design the modifications necessary to make it eligible for certification.

Presently being tested by the CAA or to be tested shortly are the Douglas C-39, Curtiss AT-9, Lockheed AT-18, Lockheed A-28A, and Stearman PT-17.

Following is the list of aircraft which the CAA has declared eligible for civil certification on the basis of similarity to approved civil models:

Army Model	Equivalent Civil Model
Aeronca L-3B	O-58B
" L-3C	O-58B
" L-3D	65-TAF
" L-3E	65-TAC
" L-3F	65-CA
" TG-5 (glider)	G-3
Beech UC-43A	D-17R
" UC-43C	F-17D
" UC-43D	E-17B
" UC-43E	C-17R
" UC-43G	C-17B
" UC-45	Can be converted to C18S
" UC-45A	" " " " C18S
" UC-45B	" " " " C18S
" UC-45F	" " " " C18S
" AT-7	" " " " C18S
" AT-7A	" " " " C18S
" AT-7B	" " " " C18S
" AT-7C	" " " " C18S
" JRB-1	" " " " C18S
" JRB-2	" " " " C18S
" JRB-3	" " " " C18S
" JRB-4	" " " " C18S
" SNB-2	" " " " C18S
" SNB-2C	" " " " C18S
Cessna UC-77B	C-34
" UC-94	C-165
Commonwealth Rearwin UC-102	9000KR
Commonwealth Rearwin UC-102A	8135
Douglas C-47	DC-3C
" C-47A	DC-3C
" C-48	DC-3A
" C-48A	DC-3A
" C-49	DC-3
" C-49A	DC-3
" C-49B	DC-3
" C-49C	DC-3
" C-49D	DC-3
" C-49E	DC-3
" C-49J	DC-3
Douglas C-49K	DC-3
" C-50	DC-3
" C-50A	DC-3
" C-50B	DC-3
" C-50C	DC-3
" C-50D	DC-3
" C-51	DC-3
" C-52	DC-3A
" C-52A	DC-3A
" C-52B	DC-3A
" C-52C	DC-3A
" C-53	DC-3A
" C-53B	DC-3A
" C-53C	DC-3A
" C-53D	DC-3A
" C-68	DC-3A
Fairchild PT-19	M-62A
" PT-19A	M-62A
" PT-19B	M-62A
" UC-86	24R40
Grumman UC-103	G-32A
Howard UC-70	DGA-15P
" UC-70B	DGA-15J
Interstate L-6	S-1B1
Lockheed C-57	18-08
" C-57B	18-08
" C-59	18-07
" C-60	18-56
" C-60A	18-56
" R-50-1	18-40
" R-50-2	18-07
" R-50-3	18-08
" R-50-5	18-56
" R-50-6	18-56
Piper L-4	J3C-65
" L-4A	J3C-65
" L-4B	J3C-65
" L-4F	J5A
" L-4G	J5B
" L-4H	J3C-65
" TG-8 (glider)	TG-8
Ryan PT-22	ST3-KR
" PT-22A	ST3-KR
Schweizer TG-2 (glider)	SGS2-8
Spartan UC-71	7W
Stinson L-9B	10A
" UC-81	SR-8B
" UC-81A	SR-10G
" UC-81B	SR-8D
" UC-81C	SR-9C
" UC-81E	SR-9F
" UC-81F	SR-10F
" UC-81G	SR-9D
" UC-81J	SR-9E
" UC-81K	SR-10C
Taylorcraft L-2	DC-65
" L-2A	DCO-65
" L-2B	DCO-65
" L-2C	DC-65
" L-2F	BL-65
" L-2H	BC12-65
" L-2J	BL12-65
" L-2K	BF12-65
" L-2M	DCO-65
" TG-6 (glider)	ST-100
Waco UC-72B	EGC-8
" UC-72D	VKS-7
" UC-72E	ZGC-7
" UC-72H	ZQC-6
" UC-72K	YKS-7

Air Power, Not Pincer Movements Will Decide War, Arnold Declares

Orthodox military tactics are on the way to oblivion and "vertical envelopment" through air power will be the battle strategy of the future, General H. H. Arnold told the Wings Club at a Washington luncheon recently.

Flanking and pincer movements of ground armies will become obsolete, he declared, and the traditional methods of combat in which ground forces encounter

General H. H. Arnold

. . . sees new battle strategy

battle stalemates and "reach immovable situations butting their heads together" will be replaced by air tactics.

Great fleets of B-29s will become as commonplace as the huge armadas of B-17s which have swept the skies over Europe, General Arnold said. "The Japanese will learn the hard way what our air strength means," he asserted.

The Government will retain some aircraft plants after the war, but how many has not been determined, according to General Arnold.

The German air force has more planes now than it did at the start of the war, but it can't get them into the air because of lack of gasoline, oil and pilots, he declared. Lack of gasoline has cut down the use of training planes and the subsequent reduction of pilots is a serious handicap to the Nazis, he revealed.

Bane Award for 1944 Given to Col. Keirn

For his contribution to the development and utilization of the new jet propulsion engine, Col. Donald J. Keirn, of the Air Technical Service command, has received the Bane award for 1944.

The award, established in 1942 by Major R. H. Fleet, president of the Institute of Aeronautical Sciences, is given annually for the most important technical achievement by an officer or a civilian of the Air Technical Service Command, Wright Field.

A committee consisting of Robert A. Lovett, Assistant Secretary of War for Air; Gen. H. H. Arnold; Dr. Lyman J. Briggs, director, National Bureau of Standards; and Major Fleet, made this year's selection.

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New Flaps Enable Pilot to Retain Control of Fighter in Fast Dives

Two Hinged Strips Under Wing Guard Ship From Breakup

THE PHANTOM HAND that seizes a plane during combat dives of tremendous velocity and shakes the plane out of the pilot's control has been shackled, scientists of the Lockheed Aircraft Corp. at Burbank reveal.

The baffling puzzle of fighter planes—the strange phenomenon of compressibility in high-speed dives—previously barred aircraft from reaching the speed of sound. The "shackles" to overcome this barrier were developed after three years of research by pilots and engineers of Lockheed and the Army Air Forces Materiel Command.

The device includes two hinged strips of metal smaller than a card table, hinged to the under side of the P-38 Lightning's wing and operated by a button on the pilot's control wheel. They are known as dive flaps, but where the ordinary dive flap serves primarily as a brake, the Lockheed flaps control the flow of air across the wing to defeat the effect of compressibility.

Used on Other Planes

They permit the Lightning to dive at tremendous speed, but still under full control. After a screaming power dive of 35,000 feet the P-38 now levels off within 3000 to 5000 feet after the pilot has begun to pull out. With a plane so equipped a pilot retains control at diving speeds which plummet a pursuing or pursued ship into thrashing disintegration.

The dive flaps have been successfully tested on another American fighter plane and are under testing on a third.

Air Flow Control—Shackling of the effect of compressibility that had hampered the speed of fighter planes in steep high-speed dives is accomplished by new dive flaps, indicated by arrow, on underside of the P-38. Lockheed's chief test pilot, Milo Burcham, left, is shown, in perhaps his last photo, discussing them with Maj. Richard Bong, Pacific ace. Burcham was killed in a crash last fortnight. (Story on page 10.)

Compressibility may be likened to snow piling up in front of a plow and breaking loose in chunks. Masses of air pile up in front of the wing during sharp dives. These masses break off in "chunks," roll back and strike the tail surfaces so hard that the turbulence causes extreme buffeting of the plane.

Additional buffeting is set up in the wing itself, by a conflict between two laws governing air flow. At supersonic speeds the air flow acts like air, compressing and expanding when the pressure is off. Between these two extremes is a broad belt where the air "can't make up its mind."

Within this compressibility belt the air's behavior fluctuates between these two laws. Pressure on the under side of the wing reverses to suction, and back to pressure again, so rapidly that the wing loses its "lift" and the buffeting ensues.

The dive flaps stabilize the air's tendency to fluctuate between the two contradictory sets of laws, and keep its behavior within the slower speed range which maintains "lift."

When retracted, the flaps leave a "clean" wing which does not reduce the Lightning's "over 420 miles per hour" speed.

Soviets Scan New Planes

A Russian delegation visited southern California during the fortnight. The members of the Soviet group looked at the Lockheed Constellation and the Hughes giant flying boat. The delegation included Col. Ilio Sarayev, acting military attache of the Soviet embassy in Washington; Col. Gregory V. Shibalov and Maj. Afancy N. Marakazov, representatives of the Soviet Purchasing Commission; and Maj. Boris J. Lebedov, first secretary to the acting military attache.

Models from Guatemala

Six prize models of American, British, German, and Japanese planes, built by school children of Guatemala, were presented on Columbus Day to Artemus L. Gates, Assistant Secretary of the Navy for Air, by Gen. Felix Castellanos, military attache at the Guatemalan embassy in Washington. The models were built from plans prepared originally by the Navy and translated into Spanish and Portuguese by the Office of the Coordinator of Inter-American Affairs and distributed by the Inter-American Escadrille, which sponsors model building contests throughout Latin America.

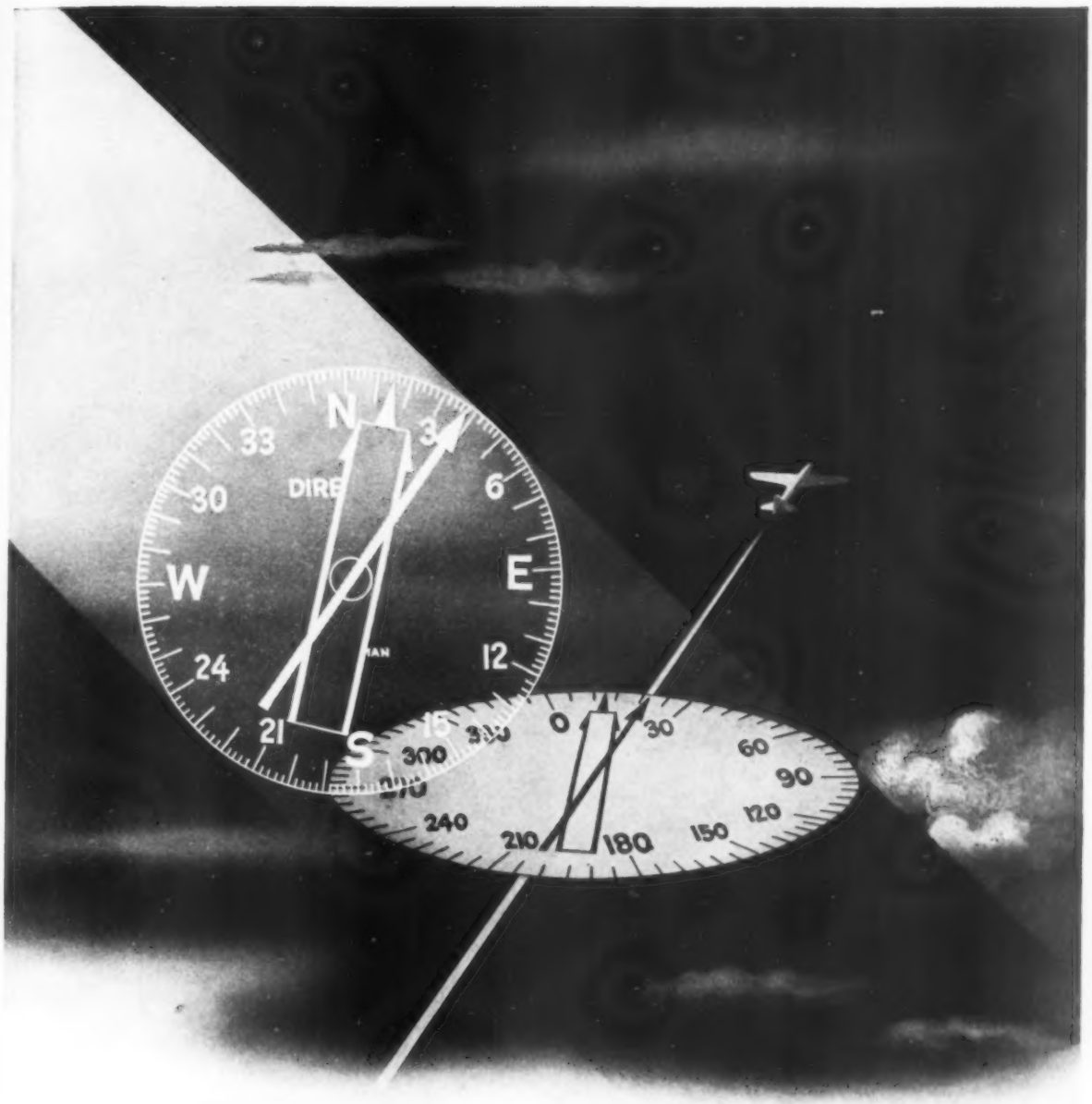
Texas A. & M. Offers Course In Air Operations Managing

A two-year course in Aviation Operations Management is being offered at Texas A & M College to train airport and fixed base operations managers.

The course requires three terms each year for a two-year period and qualifies under terms of the G. I. Bill, making returning war veterans eligible for government benefits if they desire to take the course. Training in aircraft and aircraft engine mechanics sufficient to prepare students for engine mechanics' examinations will be given along with flight instruction sufficient to qualify students for Commercial Instructor-Pilot examinations.

In addition to the required work, related studies will be given in applied mathematics, report writing, sketching and plan reading, aviation ground school, airport management, airport layout, airport accounting and other subjects necessary to prepare men to manage the many new airports which are scheduled to be built within five to ten years after the close of the war.

Culver's Fast Target Plane—Until the war is over, Culver Aircraft Corp., Wichita, will continue to produce this speedy target ship for the Army and Navy. But in the postwar period, Culver promises 'broad refinements' of prewar models.



SIMPLIFIED COMPASS INDICATION for the pilot is one of the features of the Kollsman Direction Indicator. This new direct reading, easy-to-read, easy-to-follow compass has a convenient reference pointer that can be set to the desired course making it necessary only to "match pointers." It is regarded by many pilots as one of the greatest steps taken to simplify cross country navigation for the pilot. For an illustrated folder on this original Kollsman development, write Kollsman Instrument Division, 80-08 45th Avenue, Elmhurst, New York.

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MUSKEGON, MICHIGAN

San Francisco Chamber Forms Air Department; Headed by MacDonald

An aviation department has been formed within the San Francisco Chamber of Commerce as part of the chamber's program to make the San Francisco Bay Area the "air terminal of the West." The new department, which is to coordinate the activities of the Bay Area Aviation Committee, organized by the chamber, will be managed by Kenneth R. MacDonald, who has been active for the past year and a half in committee coordination work for the Aircraft War Production Council.

MacDonald

MacDonald will cooperate with the chamber's Industrial Department in developing activities related to aviation, and will have the advisory services of Walter A. Rohde, manager of the Transportation Department, in air transport regulatory and rate making matters.

Air Lectures to Laymen

Western Reserve University, the Cleveland Chapter of the National Aeronautic Association, and the *Cleveland Press* are joint sponsors of free lectures to laymen on the future of aviation. Edward P. Warner, vice chairman of the Civil Aeronautics Board; Oliver L. Parks, president of Parks Air College; and Rear Admiral Charles E. Rosendahl, commander of the Lakehurst Naval Air Base, are scheduled to lecture.

Commercial Version of Commando Unveiled by C-W at St. Louis

By Clifford Guest

DETAILS of Curtiss-Wright Corporation's postwar transport plane—the commercial version of the Curtiss Commando which was "drafted" into military service three years ago—were made public last week when a full-size mockup of the plane was unveiled in the St. Louis plant of the company's Airplane Division.

Designed to supply the needs of the medium-range airline traffic market, the luxury airliner will include many innovations for postwar airline service, G. W. Vaughan, president of Curtiss-Wright, revealed.

Designated the CW-20E, the liner's military predecessor—the Army's C-46 and the Navy's R5C—has had some of the most thorough and rigorous testing of any transport plane now in use. Among other things, it has made up the bulk of the aerial fleet carrying war supplies "over the Hump" of the Himalayas.

The Curtiss Commando is the company's bid for the immediate postwar transport business, Vaughan said, and is to be the first of a series of transport and cargo planes. He said that a survey by Curtiss-Wright has established the fact that 85% of the airlines' business in the U S. consists of trips not exceeding 600 miles. However, the Commando has a maximum range of 1,520 miles. It is designed to take off from, and land on the average airport.

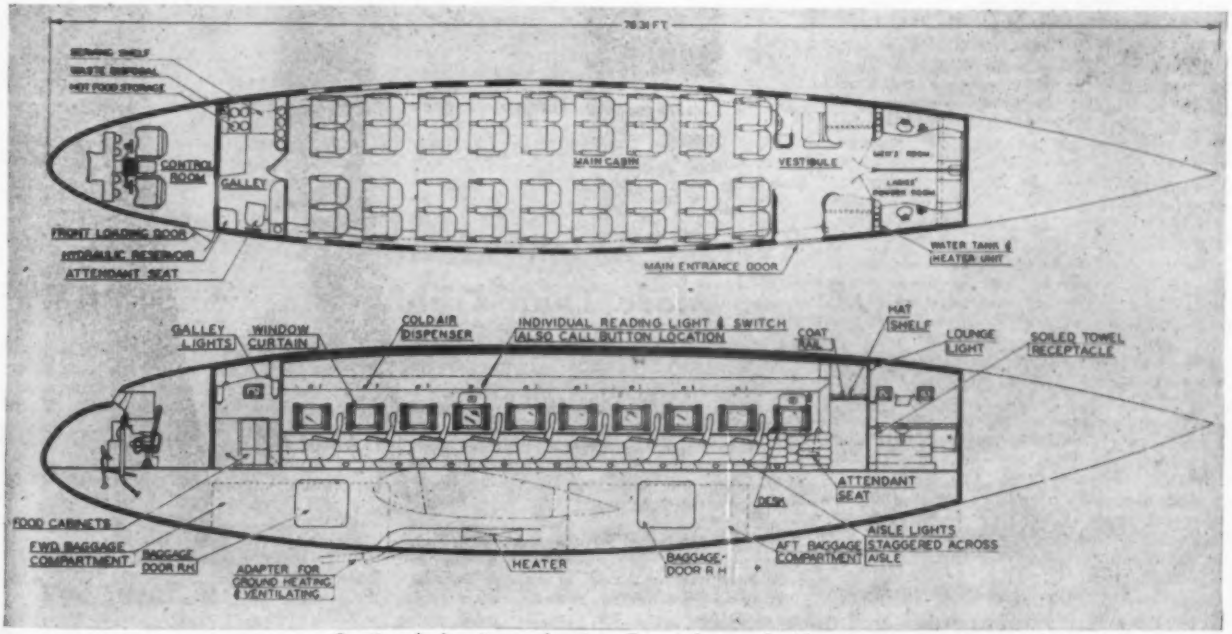
The Commando is a low-midwing 36-passenger plane, described by C-W engineers as the biggest and fastest twin-engine transport plane in the world.

A $5,000,000 order for 16 CW-20s already is on the company books from National Airlines, and Eastern Air Lines has included a number of Commandos in its $25,000,000 postwar airplane orders, already signed.

The plane was designed in St. Louis by George A. Page, Jr., now director of engineering for the Airplane Division. It includes many features suggested by airline operators.

Among the basic design changes of the

Re-touched photo showing what the Commando transport will look like.



Sectional drawings, showing floor plan and side view.

XUM

Specifications

Passenger capacity	36 to 42
Normal take-off gross weight	48,000 lbs.
Manufacturer's weight empty	32,100 lbs.
Design useful load	15,900 lbs.
Wing Area	1360 sq. ft.
Span	108 ft.
Length	76.31 ft.
Height	21.7 ft.
Engines (two)	Wright cyclone C18-B2
Meto power (each engine)	2100 hp.
Maximum gross landing weight	46,400 lbs.
Maximum payload	12,430 lbs.
Propellers	Curtis Electric three-blade quick-feathering constant-speed
Maximum Cruising Speed at 10,000 feet	242 mph

Commando, resulting from operational experience under the entire range of weather conditions, are all-welded easily-removable fuel tanks; major redesign of the nose; more powerful engines; improved flight control; greater speed, and increased weight and payload.

The silhouette is changed with a recessed nose design providing greater visibility and improved de-icing for bad weather. Deep side-view windows increase the pilots' range of vision in landing operations. "Bird-proof" windshields are used.

Control of the airplane in flight is improved through substituting—for hydraulic power boost—aerodynamic balance and spring tabs on ailerons, rudder, and elevators. All control surfaces are of metal construction.

It was designed as a combined passenger and cargo plane, and the ratio of passenger space to express and mail space was carefully worked out.

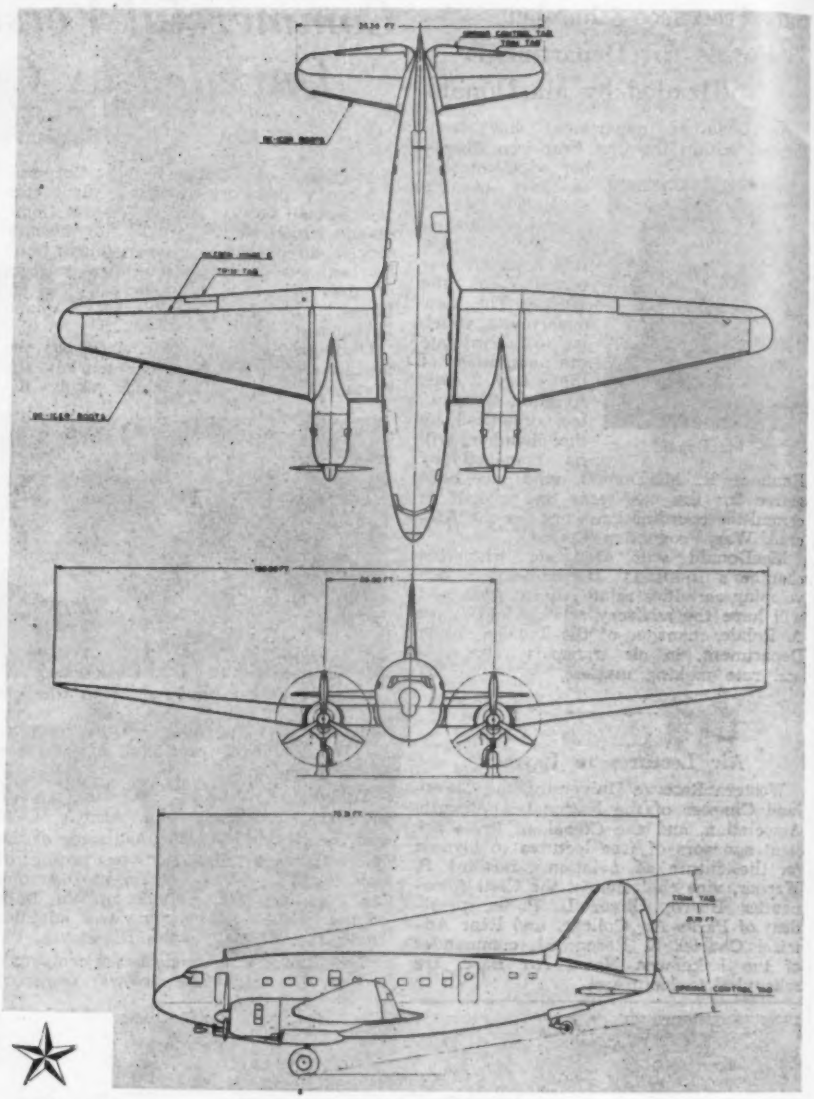
The Commando has more cargo space per passenger than any other transport plane, according to C-W engineers. In the two cargo holds there is 526 cubic feet of space for luggage, mail, express and other shipments. The two large cargo compartments are in the lower section, one forward and one aft, where they are easily accessible for loading from the ground.

In the matter of radio and electronic directional controls and ground communications, the commercial Commando will be among the best equipped planes in the world, company officials said.

The Commando's wingspread is 108 feet, over-all length is 76.31 feet, and height is 21.7 feet. It has Curtiss electric three-blade, quick-feathering, constant speed propellers. It will be powered with two twin-row Wright Cyclone 18-cylinder (C18-B2) engines.

The Commando will have a normal take-off gross weight of 48,000 pounds, a design useful load of 15,900 pounds, and a maximum cruising speed of 242 mph at 10,000 ft.

Special attention has been given to such features as insulating and soundproofing, a special galley for the preparation of food, ventilation and heating, and lighting fixtures, and hostess' quarters. Interchangeable chairs in the cabin are provided with fingertip control for reclining. A men's room and a ladies' powder room are among the provisions for passenger comfort.



Three-view drawings of CW-20E.

Average Weight of American Warplanes More Than Trebled Since Start of War

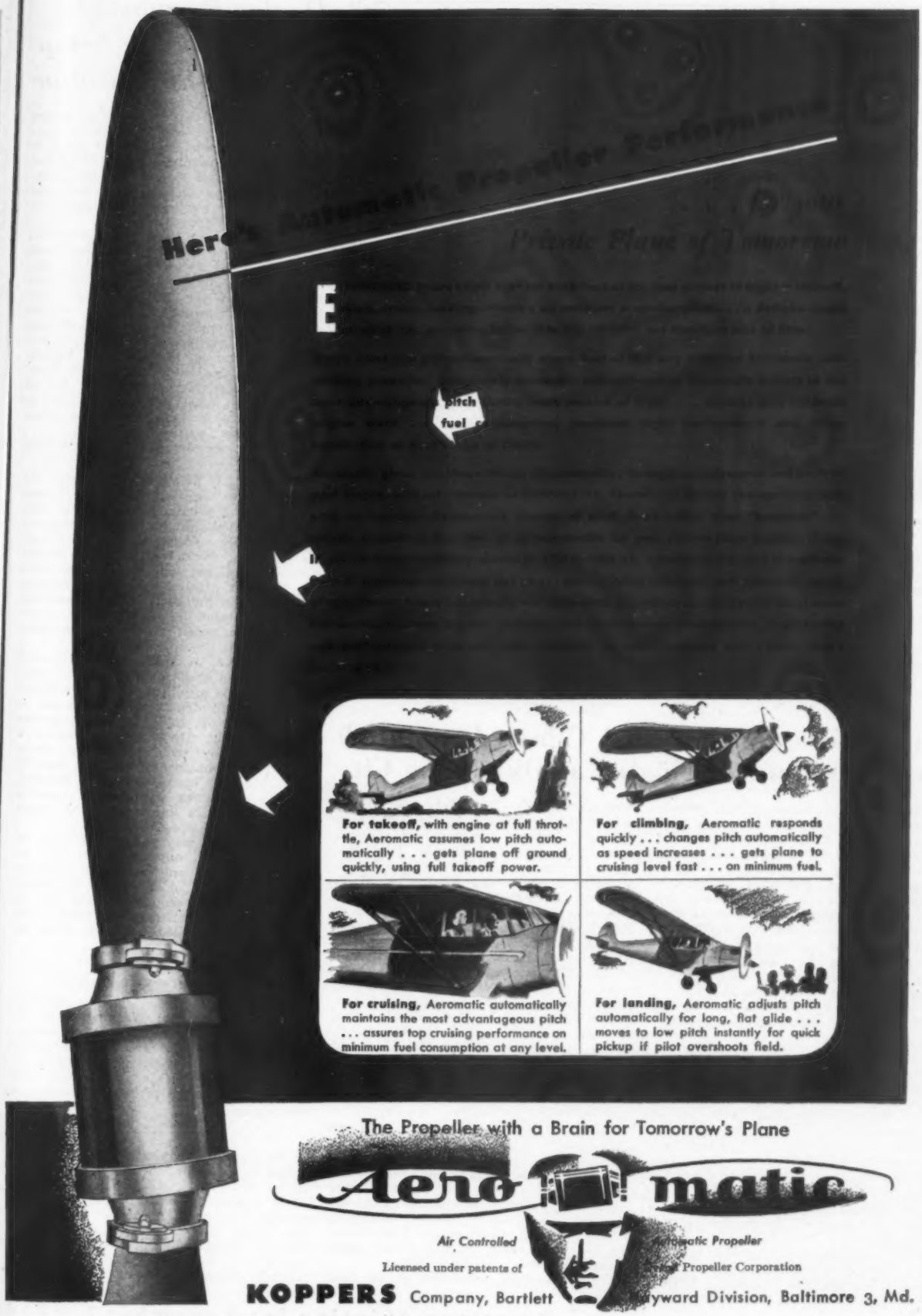
PRESENT average airframe weight of American warplanes is 10,300 pounds in contrast to the average airframe weight of 3,020 pounds for U. S. planes in 1940 shortly after the fall of France, the War Production Board revealed last fortnight.

Development of bigger and more powerful planes has been the outstanding characteristic of the nation's aircraft production program, WPB said. The increase in the average weight of planes has been accompanied in recent months by a decline in the number of planes accepted monthly and in the total airframe weight of acceptance.

In September 7,598 planes were accepted as against 7,937 in August and 9,117 in March, the latter the peak month on a numerical basis. Airframe weight in September (excluding spare parts) amounted to 78,900,000 pounds as against 79,700,000 in August and 89,800,000 in May —the latter the record month in weight. But weight per plane, at 10,270 pounds, was 2% greater in September than in August, the Board stated.

Weight in pounds for aircraft production for each September since 1940 follows: 1940, 3,020; 1941, 3,970; 1942, 5,960; 1943, 8,080 and 1944, 10,270.

WPB predicts that by December of this year, average airframe weight is due to rise still further, to 10,500 pounds.



For takeoff, with engine at full throttle, Aeromatic assumes low pitch automatically . . . gets plane off ground quickly, using full takeoff power.

For climbing, Aeromatic responds quickly . . . changes pitch automatically as speed increases . . . gets plane to cruising level fast . . . on minimum fuel.

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For landing, Aeromatic adjusts pitch automatically for long, flat glide . . . moves to low pitch instantly for quick pickup if pilot overshoots field.

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Fairchild C-82 Described

TECHNICAL information concerning the Fairchild C-82, described by the Air Technical Service Command at Wright Field as the first plane designed solely for hauling military cargo, has been released by Fairchild Aircraft with the permission of the War Department.

The C-82 has a twin-boom tail, such as that on the P-38 Lightning and the P-61 Black Widow. It is powered by two Pratt & Whitney 18-cylinder R-2800-22 engines, with a takeoff horsepower of 2,100 each, mounted at the forward ends of the booms. Wing span measures 106 ft., the wings being of gull design. The fuselage is literally suspended beneath the great cantilever wing.

The plane has a tricycle landing gear and a streamlined after-end that opens to the complete height and width of the interior, which is square to allow stowage in corners. The bottom of the fuselage is the height of a truck platform from the ground, allowing freight to be stowed directly from a truck.

Though its immediate application is for tactical purposes, Fairchild engineers see in the C-82, called the "Packet", many varied postwar uses in both domestic and foreign air express and passenger operation. They estimate that it can carry 76 passengers by day, and 30 by night. As a luxury passenger airliner, it is expected to have provisions for 50 passengers in spacious reclining chairs, a lounge, washrooms, and observation space. Conversion from passenger transport to aerial freighter may be accomplished in less than an hour by removing and storing all passenger seats, it is claimed.

The "Packet" has a range in excess of 3,500 miles and is in the 50,000 pound class. The original design was begun late in 1941 by Armand Thieblot, Fairchild's chief engineer. Actual engineering and design, including the construction and preliminary flight testing of the prototype, took less than 21 months.

The 'Packet'

Committees for National Clinic Appointed; Direct Action Anticipated at Oklahoma City

THE National Aviation Clinic, scheduled to be held in Oklahoma City from November 15 to 18, is being streamlined and sectionalized for hard-hitting, direct action, according to Stanley C. Draper, chairman of the executive committee. Draper announces that the themes of the several general sessions will be broken down into detailed discussions embracing:

1. Aviation and the Government.
2. The Role of the Personal Plane in the America of Tomorrow.
3. Airports and Air Traffic Control.
4. Travel and Trade by Air.
5. Training and Education in the Sciences and Arts of Air.

Heading the program committee is O. M. Mosier, vice president of American Airlines. Gill Robb Wilson, aviation editor of the New York *Herald-Tribune*, is vice chairman; Steadman Acker, aviation consultant to Oklahoma City, is program director; and E. J. Foley, assistant to the president of American Airlines, is secretary. Members of the committee are:

C. F. Aurand, city manager, Oklahoma City; Capt. Maxwell W. Balfour, director, Spartan School of Aeronautics; J. P. Beacom, assistant to the president, Simmonds Aerocessories; H. H. Budds, vice-president and general manager, Ranger Aircraft Engines; E. K. Gaylord, president, Oklahoma Publishing Co.; Dr. Frank W. Hart, director, Department of Education, University of California; Paul Hoheisel, president, Oklahoma City Chapter of National Aeronautic Association; R. B. Kinkead, Boeing Aircraft Co.; Lawrence Langner, president, The Theater Guild of New York City; John E. P. Morgan, treasurer, Aeronautical Chamber of Commerce; R. C. Oertel, manager, Aviation Division of Sales Department, Standard Oil Company of New Jersey; Wayne W. Parrish, editor and publisher, *American Aviation;* Robert Schott, manager, Smith Municipal Airport, Fort Wayne, Ind.; William G. Skelly, president, Skelly Oil Co.; and Harry Stringer, vice president, All American Aviation, Wilmington, Del.

Other committees and the chairman of each follow:

Public relations—Harry A. Bruno, president, H. A. Bruno & Associates, New York; resolutions—Kern Dodge, consulting engineer, Philadelphia; credentials—Col. Roscoe Turner, president, Roscoe Turner Aeronautical Corp., Indianapolis; local arrangements—Glenn C. Kiley, president, Oklahoma City Chamber of Commerce; finance—Fred Jones, Oklahoma City automobile dealer.

Other meetings scheduled to be held in Oklahoma City during the clinic include the annual convention of the National Association of State Aviation Officials, a meeting of the board of directors of the National Aeronautic Association, the Fourth War Conference of the Oklahoma Civil Air Patrol, the annual convention of the Women's National Aeronautical Association.

Dealer Responsible For Rationing Setup On 73-80 Gasoline

Details of the CAA's rationing system governing the use of 73-80 octane gasoline as announced last fortnight by T. P. Wright, CAA administrator, disclosed that retail dealers and others who buy gasoline in bulk as distinguished from the individual pilot will be responsible for the rationing setup.

Pilots of civil planes, now prohibited from sight-seeing, barnstorming and purely pleasure flying, but who are permitted to continue flying to maintain their skill in the transaction of their business, will be rationed only by the amount of gasoline available from dealers.

Pilots will receive no coupons, nor will they be required to make any reports on the gasoline they buy. Their compliance with the rules in their use of this gasoline, however, will continue to be subject to inspection by CAA areonautical inspectors in the field.

Following are details of the rationing setup:

1. All pilots, aviation enterprises and private companies with fleets of planes will obtain allocation request forms from the CAA in Washington or CAA regional offices at New York, Atlanta, Chicago, Kansas City, Fort Worth, Santa Monica and Seattle. They will apply for gasoline for the rest of this year and quarterly thereafter, on the basis of their purchase records in June, July and August, mailing the application to Washington office of the CAA.

2. The CAA at Washington will send them a ration check calling for the number of gallons to which they are entitled.

3. They will deposit this check on or after October 25, in the rationing system bank in their city and will receive a bank book by which they can draw against their balance in gallons, exactly as a monetary bank account is handled.

4. Oil companies will deliver gasoline to the dealer or bulk user only upon presentation of a signed check.

5. The dealer may sell this gasoline in any quantity to any purchaser, but he may deliver it only into the airplane tank or the tank of an engine test stand.

6. The dealer accounts for the gas he obtains on the usual report form, ACA 1327, which he filed with the CAA in Washington.

Airport Survey in Capital

The National Capital Parks and Planning Commission, of Washington, D. C. plans to make a survey of the metropolitan Washington area for available sites for postwar flying fields. As many as 20 new airports may be needed, with the majority to be privately financed, it was stated.

TO FIGHT THERE AND BACK

In this war pilots often fight far over enemy territory, hundreds of miles from their base. So fighter planes need range as well as sting. ★ In such sorties the Allison engine has proved its mettle. Its economy adds miles to every tankful. Its dependability keeps it in the fight, helps get both plane and pilot back from hazardous encounters. Its smoothness and response lessen pilot fatigue. ★ Qualities like these will continue in importance after the war's end. They will contribute to the comfort and safety of your flights in the days of great air transport to come.

POWERED BY ALLISON

P-38—Lightning
P-39—Airacobra
P-40—Warhawk
A-36 and P-51—Mustang
P-63—Kingcobra

More than 60,000 Allison engines have been built for the above planes of the U. S. Army Air Forces.

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KEEP AMERICA STRONG
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GENERAL MOTORS SYMPHONY OF THE AIR — *NBC Network*

Final Idlewild Will Cost Over 80 Million

Previous Estimates Revised Upward As Opening is Planned for Next Fall

IDLEWILD AIRPORT, marshy 4,057-acre tract in the Jamaica Bay corner of Brooklyn believed destined to be the largest airfield in the world, began to take tangible shape in three ways during one October week.

Laborers started hammering stakes to hold the boards which will border the first 10,000-foot long, 12-inch-deep, concrete runway.

The first three-dimensional scale model of the new layout for the field, made for Jay Downer, airport engineer, was completed.

The New York City Planning Commission, headed by Edwin A. Salmon, drew up financial estimates.

With these developments, the prospectus of the airport became clear for the first time. Most previous ideas of the size of the operation will need revision upward.

71 Million Estimate Low

City Planning Commission members estimated the final cost at $71,638,715, making provisions for only one hangar. The city controller's August estimate was $47,969,000 without any hangars. The most commonly used previous approximate figure has been $60,000,000.

But even the $71,636,715 estimate does not tell the entire story of the Idlewild-to-be. The cost of the hangar in the proposed City Planning Commission budget was set as $2,500,000. The final number of hangars may reach 40. The model shows 35 major hangars with a number of smaller ones. The lowest number is set at 10. Even if these 10 were to cost under the $2,500,000 mark set for one, Idelwild will, in the years to come, represent an investment of more than $80,000,000.

This gigantic status, however, will be reached in the postwar future, not on Sept. 15, 1945, when the port is scheduled to open.

Maj. Haslett

Some of the ultimate cost will depend on such decisions as to whether a marine base for seaplanes is needed after the war and many believe La-Guardia Airport will be ample to care for this type of plane.

Another point on which the investment in hangars depends is the number of airlines which will use the airport.

The most recent checkup by Maj. Elmer Haslett, director of airports for the city, shows 12 lines have indicated their intention of using Idlewild, with 10 of them "counted in" and two "probable." In this order, the lines are: American, TWA, United, Eastern, Trans-Canada, Colonial, National, American Export, Pan American, Northeast, Northwest and British Overseas.

Major Haslett forsees Idlewild as "the eventual aviation capitol of the world." He envisions the $7,500,000 administration building at the center of an air web enmeshing a world engaged in peaceful travel and commerce. He outlines it as a meeting place for sophisticated globe trotters of the future; a mecca for pilots of all nations; the site of a convention hall or board of director's assembly room for the airlines, to which fast planes would speed executives in on a few hours notice for emergency conferences; and a recreation spot for New Yorkers and by visitors to New York.

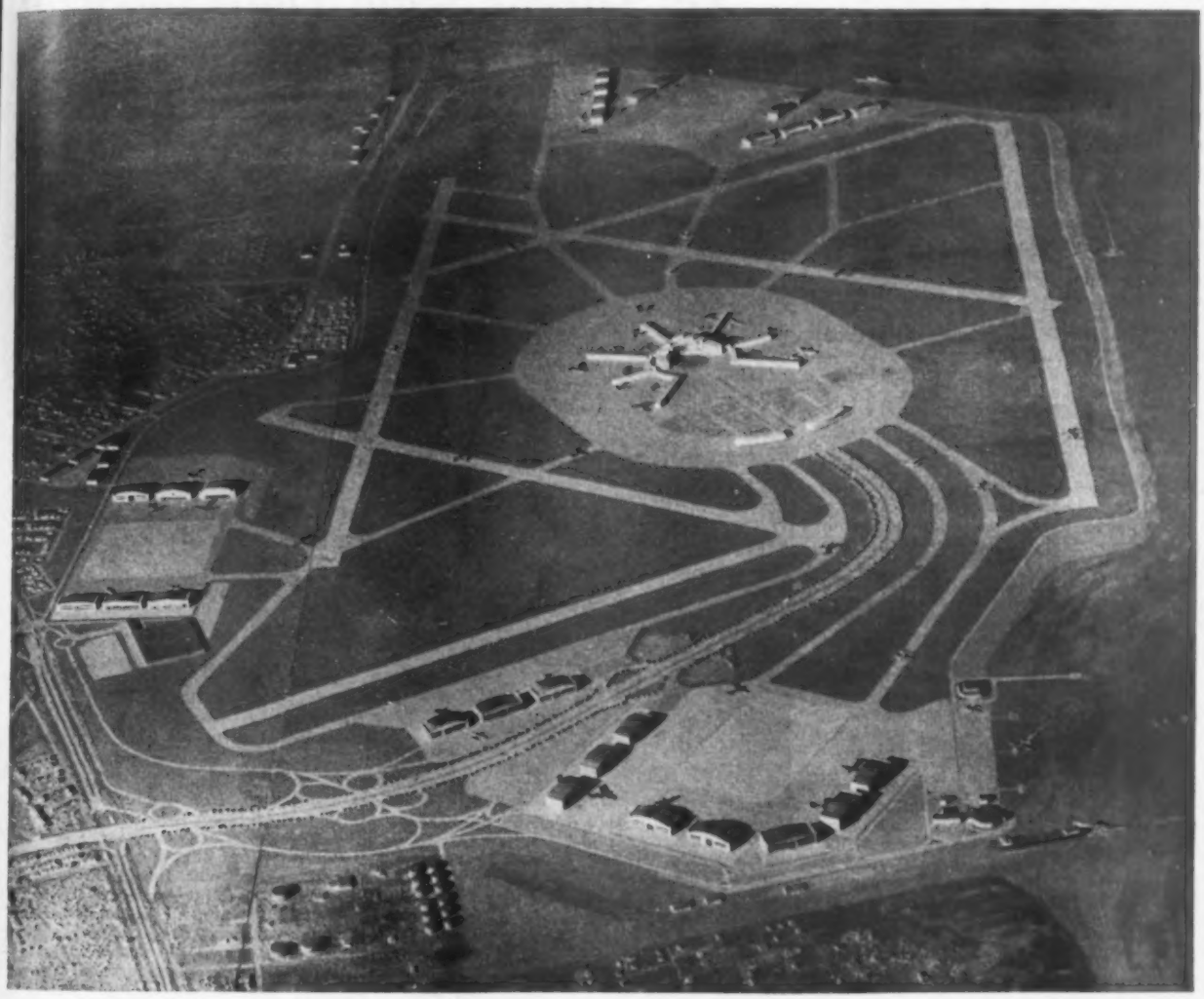
Almost as big as the "band-box" convention or assembly hall in expected size will be a movie theater and two large restaurants which will be leased concessions. Provisions will be made for at least two bars and cocktail lounges, several radio and telegraph communications offices, one or two branch banks, as well as floral shops, haberdasheries, barber shops, drug stores, fruit shops, candy stores, coffee shops, lunch counters and snack bars.

Airline officers are expected to be located in the principal building and the control tower will be perched atop the main section of the structure which will be curved so as to form most of a semi-circle. The use of radar and other radio appliances developed during the war is

Airport Planners— Working on the final Idlewild airport design are Clint Schofield, left, projects engineer in planning, and Glenn Markt, director of airport and airways design, both of American Airlines. Schofield originated the application of tangential runways to Idlewild.

Chart showing time it will take to reach Idlewild Airport (lower right) by auto from principal areas of New York City. Also shown is Idlewild's relation to La Guardia Field. Buildings near center of chart mark Times Square.

How New York City's Great Airport Will Look From the Air



Three dimensional plan of the 4,057-acre Idlewild Airport, showing $7,500,000 administration building in center with its seven loading 'fingers'. Hangar groups are shown in background, at left, and in center foreground. Tank farm for gas and oil is shown in foreground at left. Seaplane base is shown in foreground at right. Light lines show 'tangential' runways and taxi strips.

expected to diminish the size and importance of the control tower in relation to the size of the field.

This structure will have seven extensions in the form of "loading fingers" of two-story height. The second floors will be divided into offices for airlines, air commerce handlers and city officials managing the airport, and will probably include the offices of some aeronautical organizations.

The first floors of the "fingers" will be devoted principally to providing sheltered passages leading to the outer stretches of the loading apron. Along these passages, motor trucks, delivery cars, passenger autos, airport limousines, lift trucks, platform type trailers and other mechanical carriers will move merchandise, freight and passengers to the planes parked on the loading apron, which will range from 3500 to 3800 feet wide.

Roofs of the "loading fingers" will be converted into observation areas. This arrangement, as well as the expansive parking area facing the administration building, will be operated by the city, according to present plans. Separate areas for the restricted parking of taxicabs will furnish additional revenue for the field, since the taxi service is expected to be leased out as concession, as probably will be the case with bus service connecting with the distantly separated hangar areas. Circumferential roads are scheduled to permit auto traffic to skirt the field, with stops at the rear of hangar areas.

Main hangar areas will be in three sections, one at the east end of the field, as calculated from true north, in the shape of two "V's." Another at the northwest side of the field is shaped as a lone "V" flanked by a group of six more hangars facing each other in parallel series of three each. An adjacent, giant repair shop is shown on the model. The third section is on the west side of the field and includes eleven hangars.

A seaplane base, a marine air freight terminal and a marine administration building are shown on the scale replica, but these features are not as yet definitely included in the final plans for the airport.

To the North of this third hangar area is the tentative site of a tank farm for oil and gasoline in tremendous quantities. The bulk fuel storage site is now a sewage disposal plant, so that a minimum of changes will be necessary to provide an adequate channel from Jamaica Bay, with docks, piers etc. so ocean-going tankers can unload directly.

A dozen smaller, miscellaneous structures, are planned. They will include fire stations, since the projected size of the airport has brought the decision to make it a fire department area with its own air-trained city firemen, special fire trucks and other equipment.

Two more twin buildings of curved design, bordering the parking section in

London Airport Being Planned On Larger Scale Than Idlewild

AN $80,000,000 London airport, bigger than New York's Idlewild, has been designed by F. G. Miles, one of Britain's most famous aircraft designers, and he has commissioned Guy Morgan and Partners, architects, for the work. To give the project a sense of realism, a sample site has been selected on the Thames estuary, but it is understood that the plan could be adapted to any other suitable site.

Looking down on F. G. Miles' model of London Airport

The airport would be capable of handling 8,000,000 passengers a year. Double runways would be 2½ miles long and could be extended up to four miles. They would criss-cross in various directions so that take-off within less than 30 degrees "out of the wind" would be possible at any time.

Landplane hangars, about 300 feet wide, would be placed on each side of the main shelter facing the runways. The shelter would be used to protect passengers embarking and disembarking, and a subway with lifts would connect this shelter with the main airport buildings. These would house the control tower, freight warehouses, administrative offices, and probably space for bus garages, pilots' rooms, staff accommodations, hotels, customs buildings, maintenance sheds, mail offices, ticket offices, baggage weighing and storage offices, passport offices, airline offices, freight warehouses, contraband offices, inquiry offices, vehicle sheds, passenger accommodations, and shops. Rents from some of these would be expected to bring in considerable income.

Hangars and control buildings would be situated between the runways and a large, oval-shaped lagoon, 3½ miles long, 2½ miles wide, and 20 ft. deep. Flying boats would taxi directly into the hangars, where lifts would carry passengers to the main building.

The area of the proposed airport would be about 18 square miles. A 10-minute service throughout the 24 hours could be handled, it is planned, with planes carrying up to 150 passengers.

At present the site is one of desolation. The buildings are mostly hovels, many of them rickety fishermen's huts on stilts.

In nearby Jamaica bay, dredges and scows are pumping hydraulic fill onto the site which is below sea level in many parts at high tide.

About 32,500,000 cubic yards of fill have been pumped from the bay bottom at a a ration of 20 per cent sand and other solids and 80 per cent water, the water trickling back into the bay, the sand slowly settling into bogs. The total fill is estimated at about 45,000,000 cubic yards.

The airport will be covered with beach grass, the only variety which will flourish in soil of such high salt content. Half a dozen snow plows of most modern and powerful design will keep the field clear of New York City's usually moderate snowfalls.

Eventually Idlewild will present a vivid setting for postwar aviation.

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the central service area which includes the administration building are set in as merchandise terminals. These may be the nations first important heated-in-winter and refrigerated-in-summer airport fruit and vegetable terminals for air-sped products.

The project has a network of roads and bridges costing $2,730,000, nine miles of tangential 12-inch-deep concrete runways, 5.6 miles of concrete taxiways and 306 more acres of level, foot-deep concrete expanse including the central apron.

These runways, which may be made the basis of a proposed tangential system especially adapted to take advantage of the size and location of the wide expanse, are expected to permit large postwar planes to operate with peace-time railroad precision regardless of wind, fog, rain or snow.

Angled to cut interference between planes to a minimum, the six runways will include two 10,000 feet long, another 8200 feet, another 7500 feet, another 6500 and the sixth 6000 feet, all with a width of 200 feet. Taxi strips will be 100 feet wide.

First to be constructed will be one of the 10,000-foot lanes, the 8200-foot stretch and the 7500-foot runway. These are expected to be finished, along with intersecting taxi strips in 1945. The 10,000-foot runway is scheduled to be ready for planes next spring. The initial contract on the first three now under construction was let for $2,203,945 to the A. I. Savin Construction Co. of East Hartford, Conn.

The expense of runways, including drainage, filling and paving, will be between $30,000,000 and $45,000,000 or even more.

Accommodates 2-Plane Operations

This six-runway plan will enable two planes to land or take off simultaneously or at a rate of about one a minute and the field can be expanded to provide 12, which would permit four movements at the same time. Together with expanded facilities at other fields, including LaGuardia, it is expected that New York City eventually will be assured of airline operations at the rate of 360 flight movements an hour. LaGuardia now has about 450 flights a day.

Said Airport Engineer Downer:

"The runways at Idlewild have been planned to meet the needs of planes weighing up to 300,000 pounds. The largest plane now weighs 90,000 pounds. The runways can be built before the end of the war because they do not require critical materials, but probably construction of the steel administration and control building will be delayed.

Idlewild will be a long way from its final shape when it opens next fall. Instead of the $7,500,000 spider-like administration building in central service area, a $150,000 temporary structure, placed behind the site of the eventual building, will house only the most essential offices, utilities and public service concessions.

At that stage expenditures will present this tentative lineup: appropriations in 1944 by the city of $15,769,500 plus $8,889,500 realized from the sale of Floyd Bennett Field; in 1945, something like $15,000,000 in city funds, plus $15,000,000 more in federal aid yet to be granted; required after 1945, $8,488,858 of city funds, plus a similar amount from Washington.

Frank Ross Appointed

Frank E. Ross has been named assistant in the Western Region office of the Aircraft Manufacturers Council and its parent organization, the Aeronautical Chamber of Commerce. Ross was formerly director of information for the Aircraft War Production Council.

Reaction-Propelled Fighters Focus Eyes On Gas Turbine Units

Two types of reaction-propelled fighter, the Messerschmitt Me 163 and the Messerschmitt Me 262 Schwalbe (Swallow) are in service with the Luftwaffe.

They are single-seat monoplanes, the Me 163 having a single propulsion unit and the Me 262 having twin-propulsion units mounted on the wings. Information concerning the propulsion unit of the Me 163 still is vague, but the units fitted to the Me 262 are known to be gas turbine units developed by the Junkers Flugzeug Motorenwerke A. G. and designated the Jumo 004.

Some of these ships are being used in an attempt to lessen the weight of Allied air attacks against German centers, and others are used as fighter-bombers for attacking Allied forward troops.

The British magazine, "The Aeroplane Spotter," says:

"The application of reaction propulsion to instruments of peace such as high-speed mail-carrying planes where speed is the primary consideration will follow the war-stimulated development of reaction propulsion. The design of the new Armstrong Whitworth reaction-propelled mail-carrying plane for postwar use on the North Atlantic route augers well for the future."

Radio Technical Group Concentrating on VHF

The Radio Technical Commission for Aeronautics, headed by Dr. J. H. Dellinger, has resumed its studies of aeronautical radio problems with emphasis on very high and ultra high frequency radio equipment. Three special committees will direct the studies.

They are: Airborne Radio Communication and Navigation, chairman, Col. D. C. Doubleday, AAF; Ground Radio Communications and Navigation, chairman, Com. D. S. Little, Navy Bureau of Aeronautics; Test Procedure and Standards, chairman, L. M. Sherer, CAA.

Dr. Dellinger's announcement of the resumption of the radio studies, halted by the war, described radio problems as one of the most pressing facing the industry. He pointed out that many of the new developments in the use of ultra high and very high frequencies have been made by the military, and that it was highly probable that some of these will be widely applied in postwar civil aviation.

The studies are designed to lay the ground work for the development of aeronautical radio equipment and the improvement of many present flight control procedures.

Plane to 50 Autos Seen

Aircraft will be privately owned in a ratio of one to every 50 autos after the war, Geoffrey F. Morgan of the Douglas Aircraft Co. predicted in an address at Pittsburgh recently. He said owners of the personal planes will be prewar civilian pilots, young men out of the military services, sportsmen and businessmen.

Baltimore Planning New, Larger Airport

Plans for a new Baltimore airport, embracing about 2,500 acres of land lying eight miles south of the city, were disclosed last fortnight by the Baltimore Aviation Commission in presenting the city's exhibits in the CAB's North Atlantic hearing.

An initial bond issue of $3,000,000 to start the project will be voted on Nov. 7, the exhibits show. Options on a part of the airport acreage already have been secured and preliminary engineering studies have been completed.

"The site lends itself admirably to runways which can be extended up to 10,000 feet and it is the Commission's purpose to recommend that all construction and facilities be planned to accommodate airplanes of maximum weights," the exhibits state.

The airport site has an average elevation of 125 feet, is entirely free from obstructions, so that full length of the runways can be effective with glide angles as great as 50 to 1. Wind and ceiling tests conducted over a period of months reflect "almost ideal conditions," the exhibits state.

Travel time by car from the airport site to the central business district of Baltimore over present roads is 15 to 18 minutes, but access to a proposed new highspeed highway is expected to cut the time to 12 minutes.

The exhibits show that an estimated three years will be required for acquisitions of land, removal of present structures and roadways, grading and settling and beginning of construction of runways. In the meantime, the exhibits state, Baltimore's present airport, a combined land and seaplane facility "should suffice for land-based overseas operations."

'Most Air-Minded City Under American Flag' Is Claim of Anchorage

One of the busiest spots in the world from the standpoint of aviation is Merrill Field, Anchorage, Alaska. At least, so says the Anchorage Daily Times in a recent editorial.

During last July, Merrill Field handled 9,553 flights of all types, including 10 military, compared with 9,338 at LaGuardia Field, 9,512 at Miami, Fla., 8,555 at Los Angeles, and 9,497 at Salt Lake City.

The Times editorial comments that the total flights from LaGuardia field included 3,633 military operations, while those at Merrill Field were strictly civilian, except for the 10 military operations mentioned.

"Anchorage is still maintaining its claim to be the most air minded city under the American flag," the newspaper says.

Air-Rail Shipments Up 10.9%

Air express shipments carried in combination air-rail service in August were up 10.9%, the Air Express Division of Railway Express Agency reports. A total of 37,293 shipments were handled during the month, compared with 33,634 shipments in August, 1943.

Lindbergh Brings Back Results of Flight Tests Made in South Pacific

Col. Charles A. Lindbergh, after spending considerable time in the South Pacific battle area test-flying combat aircraft, is back in the United States helping the War and Navy Departments coordinate combat-gained information on performance of fighter planes.

He has been participating in a joint Army-Navy conference on fighter planes at the Navy's Patuxent, Md., experimental air station. The conference was called to evaluate and compare the performance of all types of fighter aircraft.

Col. Lindbergh, while in the South Pacific, obtained from pilots their criticisms and suggestions on certain features of the planes. He then took the planes up to determine if the criticisms were sound. The results of these tests have been brought back for use by the Army, Navy, and manufacturers.

Col. Lindbergh now is a representative of the United Aircraft Corp., which manufactures the Navy's Corsair fighter plane.

CAA Settles 96 Contracts Involving Pilot Training

The CAA's Contract Termination Board in the past four months has completed settlements with 75 contractors, involving 96 contracts under the pilot training activities of the War Training Service. The 75 contractors present claims totaling more than $3,500,000 and they were settled for $1,600,000.

The CAA said that in only one instance did a contractor fail to agree with the settlements and that contractor has appealed to T. P. Wright, CAA administrator, for reconsideration of his claim. The Contract Termination Board was headed by L. W. Lawrence, CAA's contract and service officer.

Lawrence's party covered more than 22,000 miles inspecting training centers in a four-place Beechcraft and a Spartan executive. Working with Lawrence were W. G. Stewart, assistant director of WTS; John P. Mifflin, chief of WTS operations division; and several accountants including Lewis N. Bayne, A. D'Arcy Harvey, Frank D. Holland, and Pasquale Vacchio.

Settlements were made under the Contract Settlement Act of 1944, which are final. The standard method was for the Board to visit all operators' bases in a given CAA region, and then ask each contractor to come later to the Regional Office on a specified day for conservations. The Board sought to determine whether a profit was made, whether the profit, if any was excessive, whether a loss was sustained and the cause, and what costs were incurred after the arbitrary cessation of the training last January.

West-Marquis Moves

West-Marquis, Inc., Los Angeles advertising agency which handles numerous aviation accounts, has moved to new and enlarged headquarters, Suite 530, Associated Realty Building, 510 W. Sixth St., Los Angeles, 14, in the heart of the city's "Airline Row."

Recruiting of Youths, 17, For Air Forces is Ended

With the current procurement objective of the Army Air Forces air crew training program reached, recruiting of 17-year-old youths for the Air Corps Enlisted Reserve was suspended Oct. 31.

Since January, 1942, more than 1,250,000 young men have volunteered for air combat crew training. Sixty percent passed the mental examination and, of that number, 75 percent passed the physical examination and were accepted by Army Air Forces.

With many thousands still in some stage of the training program, the AAF has announced that 453,069 men have won wings. Of these, 163,147 were commissioned as pilots, 31,293 became bombardiers, 31,906 qualified as navigators, and 226,723 graduated as aerial gunners. Those not qualifying for air crews were placed in AAF ground assignments.

Young men already in the Air Corps Enlisted Reserve will be called to active duty for training as needed, but, in any event, they will be in AAF service before they are 18 years and six months of age.

Commerce Department's Civilian Flight Training Committee Makes Report

A report recently drafted by an advisory committee appointed by the Department of Commerce to study postwar civil flight training makes the following recommendations:

1. Continued encouragement of aviation education and flight experience in the secondary schools. 2. Immediate preparation of a plan for a Federally-aided flight training program for college-age youth, in addition to any projects of the Army and Navy. 3. Emphasis throughout the program on safety. 4. All Federal assistance to be given on the basis of value to national defense needs, through creation of pilot personnel reserve. 5. Periodic review of all Federally-aided projects. 6. Coordination of all work under Federal programs by a joint committee of the Army, Navy and Civil Aeronautics Administration.

The report has been circulated to interested groups for comments and suggestions. A revised report is expected to be submitted by the Secretary of Commerce to Congress.

The study was conducted under authority contained in the Civilian Pilot Training Extender Act. The advisory committee was made up of representatives of interested aviation and education groups, including the National Aeronautic Association, the Aeronautical Chamber of Commerce, and the National Aviation Trades Association. John E. P. Morgan, manager of the Personal Aircraft Council of the ACCA, was chairman.

If Congress adopts the recommendations of the committee, it is assumed that the necessary appropriations to carry out the provisions of the civilian pilot training program would be passed and provision made for putting the program into effect.

Foot to Wheel to Wings

World Leadership to Nation With Best Transportation, Litchfield Warns

America's No. 1 postwar plan must be the maintenance of an up-to-the-minute airpower ready for instantaneous use, it is asserted by P. W. Litchfield, chairman of the board of Goodyear Tire & Rubber Co., in a booklet entitled "History's Lesson to Air Power" which was issued last fortnight.

Litchfield, whose work in aeronautics before the war was most conspicuous in the lighter-than-air field, but who built the subsidiary company, Goodyear Aircraft Corp. to a place among the 10 largest plane producers, asserts that history is pointing out a lesson to America which he fears the country is not getting.

He says that civilization's progress has been paced by the developing methods of transportation from the foot to the wheel to the wing, and that advances in world leadership go to those nations which first make the best use of transportation methods.

He declares that "narrow national vision and pinch-penny policy" after World War I crimped U. S. aviation development. "Later we aggressively developed an air commerce," he adds, "but this was due to the enterprise of individuals, not to any vision we had come into as a nation . . . From now on we cannot depend upon ability to construct planes, we must have them ready for instantaneous defensive use . . . We must keep our aircraft plants employed, keep our pilots trained, and keep abreast of the art in peacetime as well as in wartime . . .

"Planes of today will be obsolete tomorrow, and we cannot maintain airpower when the war is over if we stop production, development and use of aircraft of the most modern design. Planes for civilian use will change almost as rapidly as those for the military." Litchfield points out that the surface miles traveled now give no indication of the air miles of travel to expect in the future, and that "all major advances in transportation have had one thing in common—they save time."

The booklet is available upon request to Hugh Allen, public relations director of Goodyear Aircraft Co., Akron, O.

Tailless Fighter—Based on reports by U. S. pilots and on Messerschmitt patents for flying wing planes, this conception of the Messerschmitt Me 163 reaction-propelled single seat fighter has been drawn by the artist for the 'Aeroplane.'

10,000 hp Gas Turbines Will Be Made By Wright

Postwar airline passengers will fly at speeds in excess of 600 mph, in pressure cabins at altitudes in excess of 30,000 ft. At such speeds, the New York to London crossing of the Atlantic could be cut to five hours.

These deductions were made following a recent announcement by Guy W. Vaughan, president of Wright Aeronautical Corp., that his company will make gas turbine engines after the war capable of producing upwards of 10,000 hp.

Vaughan said the turbine engines would weigh approximately 25% less per horsepower generated than present day airplane radial and liquid-cooled power plants and either gasoline or kerosene could be used on probably a greatly increased efficiency basis.

"If the war lasts longer than we expect, the powerful turbines may be used on huge bombers and transports to help speed its end," a Wright engineer pointed out.

The new gas turbines will make possible aircraft which will carry an additional 40 passengers or four extra tons of cargo compared with operating maximums of present day engines, it was said. Jet propulsion also may be used to augment the gas turbines under certain flying conditions, it was predicted.

Plan Termination Program Now, Urges ACCA Director Of Readjustment Service

Termination programs, shaped to the needs of individual companies, should be planned now to avoid "disastrous" delays in settling aircraft war contracts, John K. Boyle, director of the readjustment service, Aeronautical Chamber of Commerce, told a recent meeting of the Institute of Internal Auditors in New York.

Asserting that it is still impossible for a major aircraft contractor to get a final settlement in less than six months, Boyle said the industry was in no position, financially, to withstand the effects of such delays. He said the problem required "statesmanship" instead of "bushels of papers, lawyers' opinions and accountants' briefs."

He suggested that government representatives be stationed in each aircraft plant immediately to assist in the preparation of planning programs. He contended it was essential to separate materials, accountability, and disposal from financial aspects of settlements, owing to the lack of adequate records on materials among aircraft manufacturers.

Equally essential, Boyle contended, was the necessity of reaching agreements as to principles of settling "momentum expenses," such as overhead items likely to continue after termination.

30 Wings to Convene

More than 30 different Wings from over the country are expected to attend the fourth war conference of the Oklahoma Civil Air Patrol in Oklahoma City Nov. 15, according to Lt. Col. Moss Patterson, Oklahoma Wing Commander.

The B.F. Goodrich Airplane of the month

BOEING B-29 SUPERFORTRESS

SUPERLATIVES have always been used, and often too freely, in describing new warplanes. For the B-29, however, superlatives seem strangely inadequate. No one warplane has ever made such a startling debut or suggested such awe-inspiring potentialities as the Boeing Superfortress.

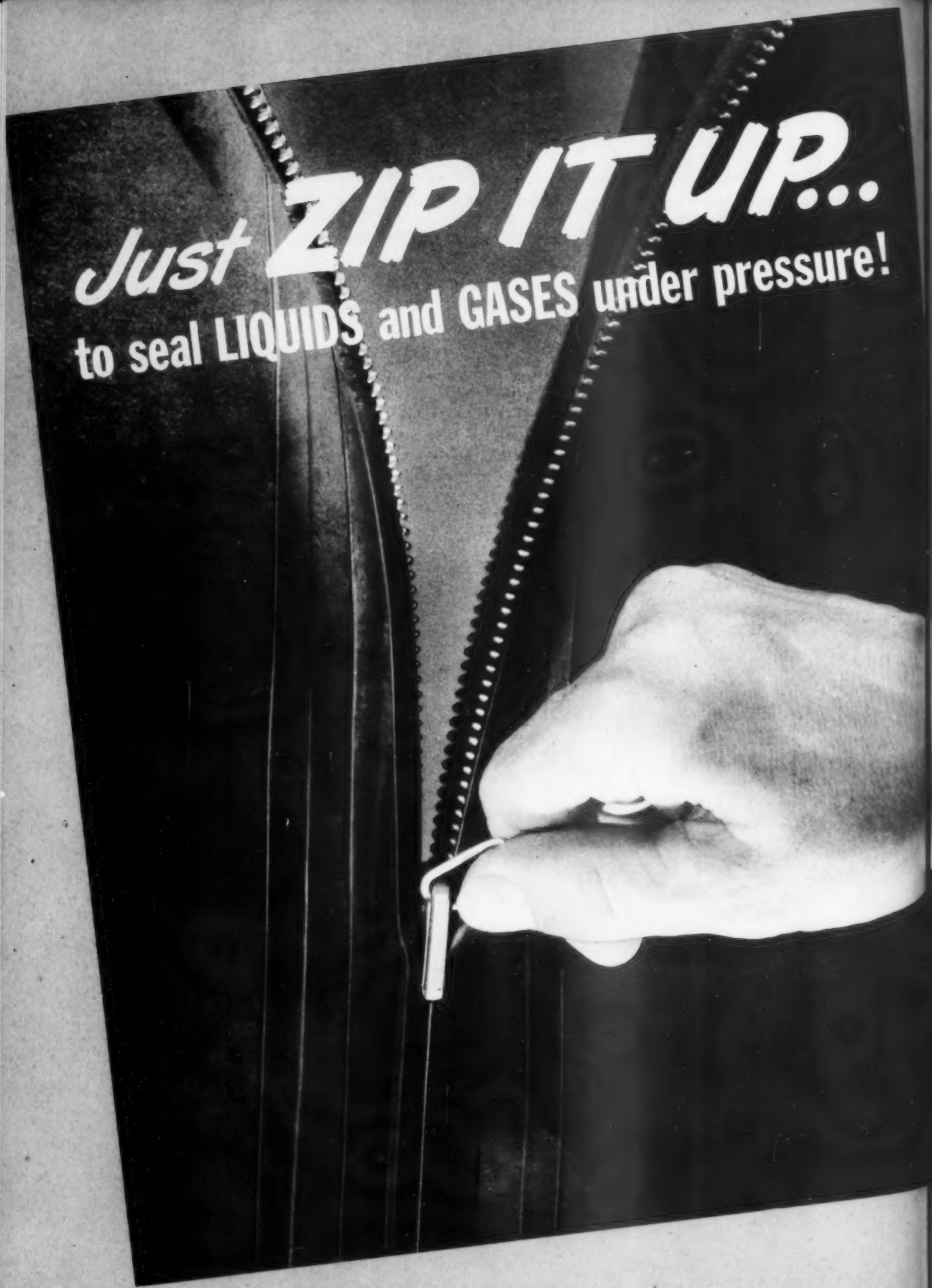
Little can be added here to the glowing tributes that have already appeared hundreds of times in the public press. Suffice it to say, this airplane is destined to write its own eulogy on the pages of history.

Every man and woman who helped make the B-29 possible shares abundant credit for a remarkable achievement. Adding one more handclap to a nation's applause, B. F. Goodrich salutes Boeing—names the Boeing B-29 Superfortress "Airplane of the Month."

In war or peace

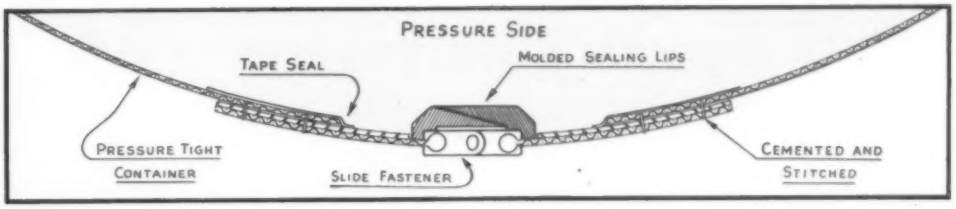
B.F.Goodrich

FIRST IN RUBBER


Just ZIP IT UP...
to seal LIQUIDS and GASES under pressure!

Introducing the B.F. Goodrich PRESSURE SEALING ZIPPER

Perhaps YOU can use it



ONE of the newest products of B.F. Goodrich research is a zipper which won't let gases or liquids through, even under high pressure.

B. F. Goodrich engineers have taken a slide fastener and added a precision-molded rubber seal that opens and closes with the fastener. This seal is a unique arrangement of overlapping rubber lips which provides an effective and complete seal from zero pressures to pressures up to the structural strength of the fastener itself.

B. F. Goodrich Pressure Sealing Zippers can be applied to metal, fabric, or sheet rubber, provided a sufficient clearance is allowed for proper operation of the fastener. They may be installed by stitching or cementing, depending on application.

These zippers are effective in a wide temperature range. The rubber won't crack when bent at −70° F. nor become soft at 150° F. Weatherability is good; aging tests have shown present compound is best possible for this type of product.

Three types of B. F. Goodrich Pressure Sealing Zippers to choose from

Style 400: Non-Separating type seals throughout its entire length but is open at the top. It has a slider which can be operated from either or both sides. This type of closure may be used in applications such as exposure suits.

Style 410: Separating type; seals for entire length but not at ends. Slider operates from either or both sides. This type is now being used effectively as an aileron gap seal.

Style 420: Non-Separating type. Seals at both ends and along entire length. Slider operates from side opposite sealing lips. Originally developed as a closure for pressure vessels, it suggests many other interesting uses.

Aeronautical uses

Among the many uses suggested for this unusual closure are the following aeronautical applications: (a) For joining sections of both low- and high-pressure ducts. (b) Sealing doorways and hand-holes where there are pressure differentials. (c) Sealing bail-out kits and instrument cases. (d) Weather seals. Undoubtedly many more uses will come to our attention as people learn about the B. F. Goodrich Pressure Sealing Zipper.

Perhaps you may think of a use for it. Our engineers will be glad to call on you and discuss your applications. The B. F. Goodrich Co., Aeronautical Division, Akron, O.

ARMY E NAVY
Awards to 9 plants

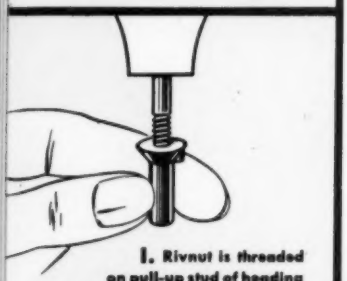
Skyway or Highway

B.F. Goodrich

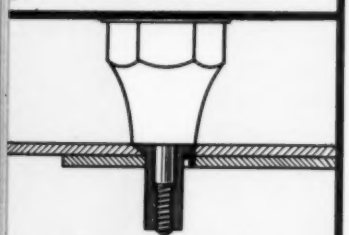
FIRST IN RUBBER

NEW RIVNUTS FOR WIDER RANGE OF FASTENING APPLICATIONS!

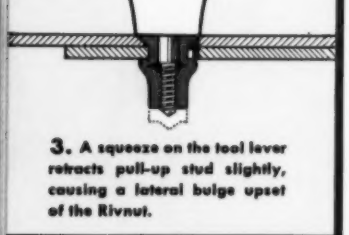
RIVNUT installation is SIMPLE... FAST... FOOL-PROOF!



1. Rivnut is threaded on pull-up stud of heading tool until it touches the anvil.



2. Rivnut and pull-up stud is placed in hole with Rivnut head firmly against, and at right angles to, the work.



3. A squeeze on the tool lever retracts pull-up stud slightly, causing a lateral bulge upset of the Rivnut.

4. When pull-up stud is removed, the Rivnut can be used as a nut plate. Threads grip accessory screw firmly.

TWO NEW KINDS of B.F.Goodrich Rivnuts—Brass and Splined Aluminum—have recently been added to the line. Both of these new types, like the regular aluminum Rivnut, can be used as a blind rivet, as a nut plate for attachment, or as both at once. In addition, the new types have the same advantages as the standard Rivnut. They're simple in design (one-piece); they're compact—require a smaller hole yet have larger bearing area than any other blind fastener; they're ready for use as received. More complete information about each type is given below:

SPLINED ALUMINUM

This Rivnut is ideal for use as a nut plate in wood or plastics because the splined shank gives excellent torsion resistance. A full range of sizes and head types is available.

BRASS This is one of the newcomers—a stronger B. F. Goodrich Rivnut for blind fastening where greater tensile and shear strength is required (about 50% stronger than aluminum). Production now limited to sizes 6, 8, and 10. More sizes will be announced when available.

53-S ALUMINUM ALLOY This is the standard Rivnut originally designed for aeronautical use and now doing hundreds of fastening jobs. It is light, strong, corrosion-resistant . . . and so easy to install, even a blind man can do it. Full range of types, sizes, grips available.

For more facts, get "RIVNUT DATA"

Contains full information on Rivnut types, sizes, grip ranges, etc.—also step-by-step illustrated installation procedure. For your copy, write to The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.

B.F.Goodrich

RIVNUT

IT'S A RIVET...IT'S A NUT PLATE

Georgia Aero Association Committee— This is the executive committee of the Georgia State Aeronautics Association, formed at the recent Georgia Aviation Clinic in Macon. Left to right—Lee S. Trimble, secretary; George C. Heyward, chairman of the city council aviation committee of Savannah; Noah E. Holton, Coffee County Commissioner; Mayor Charles L. Bowden of Macon; Richard E. Allen, former mayor of Augusta; and Al B. Richardson, Eastern representative of the Aeronautical Training Society.

Institute Accepting Funds For Creation of Aviation Exhibit at San Diego, Cal.

The Institute of Aeronautical Sciences is accepting subscriptions to a fund for the erection of a building in San Diego where a permanent aviation exhibit can be maintained and where engineers can hold meetings and have the benefit of adequate library facilities.

Upon his return from the West Coast recently, Maj. R. H. Fleet, president of the Institute, announced that gifts totaling $164,800 have already been received toward the accomplishment of these objectives. The contributors to the fund are: Consolidated Vultee Aircraft Corp., Solar Aircraft Co., Ryan Aeronautical Co., Langley Corporation, and several individuals.

Major Fleet said that postwar safety and the air transport leadership in this country will depend on the skill and advanced thinking of the nation's aeronautical engineers. He feels that the erection of such a building, housing those facilities which will promote and encourage the cause of aviation in general, would help to achieve the national objectives.

ATSC-PGC Teamwork

Teamwork between the Air Technical Service Command at Wright Field and the Army Air Forces Proving Ground Command at Eglin Field, Fla., is paying off in the global skies, the AAF reports. Allied success in the air on every battle front is due largely to the thoroughness of tests both at Wright and Eglin. The ATSC uses cold chambers, all-weather rooms, and other devices for laboratory testing and gives planes and equipment flight tests, but the PGC uses natural facilities for proving, both in Florida and at a station in the Arctic.

History at His Fingertips— Richard J. Calhoun, chief pasenger agent for Western Air Lines at Las Vegas, Nev., has completed a year's hobby—indexing alphabetically and by subject every issue of American Aviation since its inception June 1, 1937. He says his hobby has meant many enjoyable eight-hour Sundays. Material in each issue is indexed on cards. Every six months he transfers the cards to paper the size of the magazine and the permanent index then is bound with copies of the magazine covered in that portion, giving two indexes per year.

Minnesota Short Course

Nine topics relating to operation and management problems of the small airport are to form the basis for a short course which is to be conducted at the Center for Continuation Study of the University of Minnesota on Nov. 9, 10 and 11. The State of Minnesota, Department of Aeronautics, and the League of Minnesota Municipalities will join with the university in sponsoring the course, which is planned primarily for the benefit of officials of smaller communities.

Closing of 15 Schools Brings Plea for Plans On Postwar Training

Closing of 15 contract flying schools Oct. 16 emphasized the need for speeding plans for postwar military training policies, according to J. Wendell Coombs, president of the Aeronautical Training Society.

"The Government has 43 million dollars in contract flying school property and if this investment is to be maintained as a continuing asset for the nation in war or peace, future training plans should be advanced now," Coombs said. "The taxpayer has paid for building up a highly efficient training setup and the top skills of aviation have been assembled to do the job during the war emergency. No American wants to continue doing a full scale war job when the emergency is past but no thoughtful American ought to stand by idly and see the know-how, the trained management, the physical resources of the training setup disintegrate.

"The record the contract schools have made in producing the world's top pilots at a rate which has passed 110,000 yearly merits at least partial continuance in the troubled days that lie ahead. Masses of young Americans have been taught to fly more safely and for a fraction of the cost of that prior to 1939. It is time for the Army and Congress to consider how to keep America strong in the air and yet save the taxpayer a needless burden of taxation. On the record the civilian schools merit consideration for doing elementary flight training."

Schools closed Oct. 16 were: Thunderbird II, Phoenix, Ariz.; Pine Bluff School of Aviation, Pine Bluff, Ark.; Palo Alto Airport, Inc., King City, Cal.; Cal-Aero Academy, Ontario, Cal.; Visalia-Dinuba School of Aeronautics, Visalia, Cal.; Dorr Field, Arcadia, Fla.; Lodwick Aviation Military Academy, Avon Park, Fla.; Graham Aviation School, Americus, Ga.; Clarksdale School of Aviation, Clarksdale, Miss.; Missouri Institute of Aeronautics, Sikeston, Mo.; Southeastern Air Service, Inc., Bennettsville, S. Car.; Harman Training Center, Ballinger, Texas; Bonham Aviation School, Bonham, Texas; Coleman Flying School, Coleman, Texas and Air Activities of Texas, Corsicana, Texas.

'Modern Industry' Poll

Industrial management is opposed to a "chosen instrument" in the operation of international air transportation, according to the results of a poll by Modern Industry magazine. The results indicated 91.5% opposed to single company operation and 8.5% in favor of it. In answer to the question, "Should U. S. overseas airlines be operated by a single company? the voting by geographic areas shows:

	Yes	No
New England	7.7	92.3
Mid Atlantic	8.6	91.4
North Atlantic	9.3	90.7
South	7.8	92.2
West	7.7	92.3
Pacific Coast	9.3	90.7

Army Studies Move to Raise Airline Plane Quota Over 300

Companies Advised To File Needs With Surplus Officials

THE DOMESTIC AIRLINES of the United States are being advised to file with the Surplus War Property Administration their transport plane requirements for immediate or early post-war use although the possibility does exist that additional new allocations of planes will be made through the War Department.

Because of continuing heavy war travel requirements, it is understood that the Munitions Assignment Commission for Air does have under consideration the need for a supplementary directive from the President which would permit the transfer of additional transport planes from military excess to the airlines. Under the President's second directive, the quota was fixed at 300 and assignments and allocations to fill the quota have now been made.

Airlines should file a statement of their plane needs with James A. Garfield, chief of the Surplus War Aircraft Division of the Defense Plant Corp., RFC, Washington. A copy of this statement should also be filed with the Civil Aeronautics Board because the Board has a representative on the advisory groups to both agencies. Board recommendations as to the allocation of planes, based on its knowledge and control of airline operations, will be closely followed, regardless of which agencies may control the assignment of additional planes.

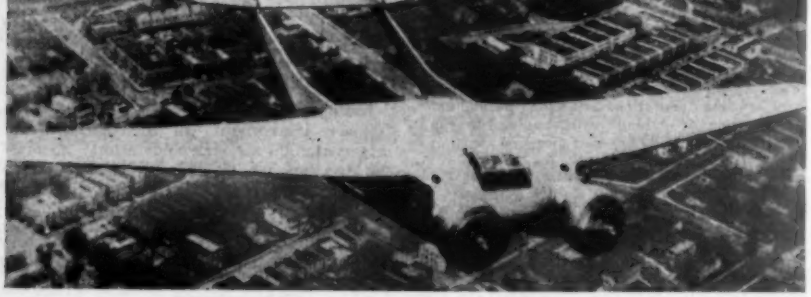
Early collapse of Germany probably would result in the Army declaring surplus a considerable number of C-47 planes, Army version of the Douglas DC-3. In that event, the responsibility for their disposal probably would be turned over immediately to the Surplus War Aircraft Division under Garfield.

However, if the war in Europe runs well into next year, the Army may continue its controls and release from excess such numbers of planes as may be necessary to wartime transportation needs of the airlines. Increase in production of C-47s is not looked for under present aircraft production plans. In fact, cutbacks may be expected in favor of increasing production on the larger four-engine types which will be needed in the prosecution of the war against Japan.

War department sources stated that they were eager to turn over to SWAD the controls as soon as possible. Under the procedure now in effect, an analysis committee, including a representative of the Civil Aeronautics Board, will screen the applications filed with Garfield's division of SWAD as to urgency and more or less long range requirements and until the Division actually receives surplus transport planes, it will forward these applications to the Munitions Assignment Commission.

PCA Re-employment Policy

A re-employment policy for Pennsylvania-Central Airline employes who are in the service includes free transportation from any point on the PCA system to Washington, D. C., subject to space; payment by the airline of the former employe's immediate expense until he is on the payroll; and putting him on the payroll the same day he reports to Washington headquarters, provided he is willing and able to accept employment. Employes may contact any PCA station to arrange transportation details.



TACA's Burnelli UB-14—This plane, one of the only two craft of its kind in existence, landed at Roosevelt Field, New York, on Oct. 18 enroute from Montreal to Central America. It had been at the Canadian Car and Foundry Co. for a complete overhaul. In design, the UB-14 is a combination of the flying wing and conventional type plane, and its outstanding characteristic is that its disposable load is 50% of the gross weight, which gives it a very high payload in proportion to the total weight of the plane. It has been outfitted for operations in the tropics, and will be used for cargo service.

CAB Calendar

Nov. 1—Hearing on West Coast applications in San Francisco, Oregon Airways, Inc. (Docket 250 et al).

Nov. 20—Hearing at Ketchikan, Alaska, on appplication of Ellis Air Transport and Ketchikan Air Service for routes in Ketchikan area.

Nov. 27—Hearing on Florida cases. (Docket 489 et al).

Dec. 4—Hearing on the New England cases. (Docket 399 et al). (Tentative).

Jan. 8—Hearing on Oklahoma-Texas application. (Docket 337 et al).

Jan. 10—Hearing on North-Central Pacific and Alaska routes. (Tentative).

Jan. 10—Hearing on South Atlantic route applications.

Feb. 6—Hearing on North Central case (Docket 415 et al).

American Aviation Writers Place in TWA Competition For 7th Consecutive Year

American Aviation writers have won recognition in Transcontinental and Western Air's annual aviation writing and photographic competition for the seventh consecutive year. Wayne W. Parrish, editor, won first prize in the magazine division for his weekly column in *Liberty Magazine*, and E. J. Foley and Eric Bramley won second and third prizes, respectively, in the magazine division. Foley is Equipment Editor and Bramley is Executive Editor of *American Aviation*.

Robert Ball, aviation editor of the *Detroit News*, now on military leave, was adjudged the winner in the newspaper, open class, division, while William W. Dyviniak, photographer for the *Buffalo Courier-Express*, won the photographic competition for an entry, "Out of Gas," showing a Navy Catalina flying boat being refueled. Nick Moser of the *Reading (Pa.) Eagles-Time* achieved top honors among writers for newspapers of under 100,000 circulation.

Ball, Parrish, and Dyviniak will each receive first prize money of $250, and Moser, $150, with the annual TWA rotating trophies going to their publications for the next year. The awards will be made at a dinner at the Stevens Hotel, Chicago, Nov. 9.

Second and third prize winners in the newspaper, open class, division were Reginald Cleveland, *New York Times* editorial writer, and Robert H. Helmer, *Cincinnati Enquirer*, and in photography, J. Howard Cutler, *Reading Eagle-Times*, and James N. Keen, *Dayton (O.) Journal-Herald*.

Francis S. Murphy, *Hartford (Conn.) Times*, won second, and Dan K. Park and Robert R. Gerhart, Jr., *Reading Eagle-Times*, tied for third prize in the competition among writers for newspapers of under 100,000 circulation.

Judges were L. Welch Pogue, chairman of the Civil Aeronautics Board; Grover Loening, consultant on aircraft for the War Production Board; Casey Jones, head of the Casey Jones School of Aeronautics; and E. Lee Talman, executive vice president of TWA.

Domestic Airlines Will Operate Soon With Full Quota of Planes

Munitions Assignment Board-Air Made Final Allocation October 10

THE domestic airlines of the United States, with the recent return of 26 Douglas DC-3 transports from the Army, will soon be able to operate with the full quota of 300 as is provided for under the terms of President Roosevelt's second directive, based on war transportation needs.

The final allocation was made Oct. 10 by the Munitions Assignment Board for Air with the following airlines receiving planes: Eastern 5, United 5, TWA 5, American 4, PCA 3, Braniff 1, Delta 1, Northeast 1 and Western-Inland 1.

A study of the chart, herewith, reveals that the airlines owned 341 planes as of Dec. 31, 1941. Of this total, 176 were requisitioned for military service. On the basis of the final allocation, 134 of the 176 planes requisitioned have been returned.

Domestic airlines, when all of the planes have been converted to passenger use, will be operating with 275 Douglas DC-3's, 16 Lockheed Lodestars, two Lockheed Electra's two DC-2's, and five B-307's—the Boeing Stratoliners owned by TWA. The DC-2's were acquired by All American Aviation but until recently the company had not yet decided whether they will be converted for combined passenger-pickup operations.

The chart, giving a summary of multi-motored aircraft allocations to U. S. domestic airlines,[1] Dec 1, 1941 to Oct. 12, 1944 follows:

Carrier	Aircraft owned at Dec. 31, 1941		Aircraft requisioned for military service		On hand after requisitioned by U. S. in May, 1942		Aircraft allocated to carriers since Dec. 31, 1942 [2]		Aircraft now available for commercial service	
	No.	Type	No.	Type	No.	Type	No.	Type	No.	Type
All American	0		0		0		2	DC-2	2	DC-2
American ...	15	DST	15	DST						
	64	DC-3	21	DC-3	43	DC-3	24	DC-3	67	DC-3
Braniff	11	DC-3	4	DC-3	7	DC-3	5	DC-3	12	DC-3
	5	DC-2	5	DC-2						
C & S	6	DC-3	2	DC-3	4	DC-3	2	DC-3	6	DC-3
Colonial Airlines	4	DC-3	3	DC-3	2	DC-3	2	DC-3	4	DC-3
Continental .	6	Lodestar	3	Lodestar	3	Lodestar	1	Lodestar	4	Lodestar
							2	DC-3	2	DC-3
Delta	5	DC-3	1	DC-3	4	DC-3	4	DC-3	8	DC-3
	4	Electra	4	Electra						
Essair, Inc.[3].	0		0		0		2	Electra	2	Electra
Eastern	35	DC-3	15	DC-3	20	DC-3	14	DC-3	34	DC-3
	5	DST	5	DST					2	Lodestar[4]
Inland	5	247-D	5	247-D	1	Lodestar	1	DC-3	1	DC-3
Mid-Continent	4	Lodestar	2	Lodestar	2	do	2	Lodestar	4	Lodestar
	5	Electra	5	Electra			3	DC-3	3	DC-3
National Airlines	3	Lodestar	2	do	3	do	3	Lodestar	6	Lodestar
	2	Electra								
Northeast ...	3	DC-3	1	DC-3	2	DC-3	2	DC-3	4	DC-3
	1	Electra	1	Electra						
Northwest ..	11	DC-3	4	DC-3	7	DC-3	6	DC-3	13	DC-3
	4	Electra	4	Electra						
PCA	16	DC-3	12	DC-3	6	DC-3	11	DC-3	17	DC-3
	4	247-D	4	247-D						
TWA	8	DC-2	3	DC-2	25	DC-3	16	DC-3	41	DC-3
	21	DC-3	8	SDT			5	B 307	5	B 307
	8	SDT	5	B 307						
	5	B-307								
United	39	DC-3	6	DC-3	33	DC-3	22	DC-3	55	DC-3
	15	DST	14	DST						
	13	247-D[5]	13	247-D						
Western	5	DC-3	2	DC-3	3	DC-3	5	DC-3	8	DC-3[4]
	2	DST	2	DST	1	Lodestar				
	5	247-D	5	247-D						
Total by types ...	37	DST	36	DST	156	DC-3	119	DC-3	275	DC-3
	8	SDT	8	SDT	10	Lodestar	2	DC-2	2	DC-2
	222	DC-3	71	DC-3			6	Lodestar	16	Lodestar
	13	DC-2	8	DC-2			2	Electra	2	Electra
	13	Lodestar	5	Lodestar			5	B 307	5	B 307
	16	Electra	16	Electra						
	27	247-D	27	247-D						
	5	B-307	5	B 307						
Grand Total	341		176		166		134		300	

[1] Domestic carriers operating outside the continental limits of the U. S. are not included.
[2] Does not include replacements for aircraft destroyed in accidents as follows: American, 5 DC-3s; TWA, 1 DC-3; Western, 1 DC-3.
[3] This carrier not yet operating.
[4] One Lodestar transferred to Inland by Weal purposes.
[5] Excluding one 247-D used for experimentstern.

Southeastern Deal— Wesley N. Raymond (right), head of Raymond Aviation School, Inc., Macon, Ga., is shown signing contract under which Southeastern Air Service, Inc., acquires the school and its Herbert Smart Airport rights in Macon. Raymond becomes president of Southeastern Air Express, Inc., subsidiary of SAS. At left—Cody Laird, president of the parent company.

Steamship Companies Carry Fight to Enter Aviation to President

Steamship companies, through Rep. Schuyler O. Bland (D. Va.) chairman of the House committee on Merchant Marine and Fisheries, and Vice Admiral Emory S. Land, chairman of the U. S. Maritime Commission, have carried their fight to enter aviation to the White House.

Rep. Bland and Admiral Land conferred with President Roosevelt Oct. 17. They are understood to have urged Administration assistance in getting legislation passed which would clearly give the steamship companies the right to operate aircraft in the postwar era.

Asserting that the President appeared interested, Rep. Bland said that he felt sure that the proposals would receive careful consideration by the Chief Executive. He declined to disclose details of the proposals, stating that such information must come from the President. The White House made no statement.

Two months ago, Rep. Bland appointed an aviation subcommittee of the Merchant Marine and Fisheries committee, naming himself as chairman. The subcommittee then held open hearings in which shipping interests, government officials and transportation experts, were permitted to testify that unless the merchant marine could engage in supplementary aircraft operations, it would face ruinous competition from foreign shipping interests, which they assumed, would be granted the right to enter aviation. Since then Rep. Bland has introduced a bill which would give shipping this right and it was referred to Bland's committee. A fight over committee jurisdiction (normally aviation matters go to the House committee on Interstate and Foreign Commerce) may develop when the Congress reconvenes Nov. 14.

New Stop for Northeast

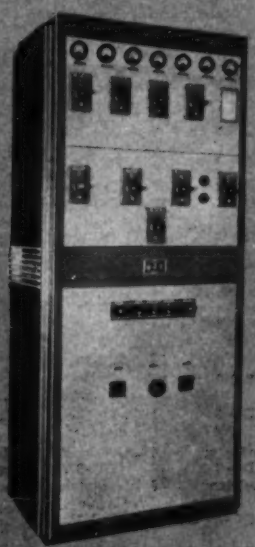
CAB last fortnight awarded Northeast Airlines an intermediate stop at Lawrence, Mass., between Boston and Portland, on Route 27.

TRANSMITTERS fo

TRANSMITTER TYPE ET-4331

Frequency Range.....3000 to 20,000 kc.
Oscillator Circuit...Crystal
No. of RF Channels...One
No. of Frequencies....Six
Power Output...1 kilowatt
Type of Emission.....Telephone

High fidelity with audio substantially flat between 50 and 10,000 cycles. Speech inverter for security of messages available as accessory equipment.



TRANSMITTER TYPE ET-4339

Frequency Range.....1700 to 20,000 kc.
Oscillator Circuit...Crystal
Power Output..200 watts
Type of Emission.....Telephone and Telegraph
No. of RF Channels...Two
No. of Frequencies...Four

Single unit construction. Remote control available as accessory equipment.

TRANSMITTER TYPE ET-4335 LF

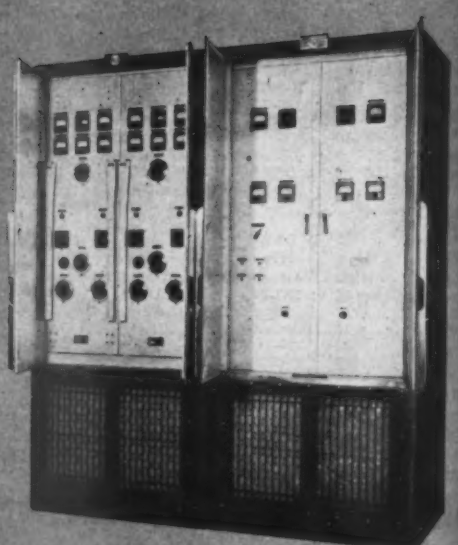
Frequency Range.....150 to 600 kc.
Oscillator.....Crystal
Power Output.....250 watts Telephone
350 watts Telegraph
No. of RF Channels...One
No. of Frequencies...One

Modulation indicator and tuning controls on front panel. Built-in speech amplifier, modulator and power supply.

TRANSMITTER TYPE AVT-228

Frequency Range.....2650 to 19,000 kc.
Oscillator Circuit.....Crystal or M.O.
No. of Channels.....(Two pictured) May be added as desired
No. of Frequencies.....One per channel
Power Output..5 kilowatts
Type of Emission.....Telephone or Telegraph

Additional channels may be added as required. Master oscillator available as accessory equipment.



...RS for WORLD-WIDE SERVICE

—Powered by RCA

TRANSMITTER TYPE ET-4332-A

Frequency Range.....2200 to 20,000 kc.
Oscillator Circuit...Crystal
Power Output.....250 watts Telephone
350 watts Telegraph
No. of RF Channels...One
No. of Frequencies...One
Vertical chassis construction.
Separate speech amplifier.

TRANSMITTER TYPE ET-4336 C

Frequency Range.....2000 to 20,000 kc
Oscillator Circuit...Crystal
Power Output.....250 watts Telephone
350 watts Telegraph
No. of RF Channels...One
No. of Frequencies...One
Vertical chassis construction.
Built-in modulation indicator.
Separate speech amplifier.

RCA aviation radio engineering has long been international. All over the world airport control towers and ground stations powered with RCA Transmitters are directing plane traffic, operating radio ranges, communicating with other airports—even in some cases providing shore-to-ship service, or furnishing inter-city telephone facilities—and carrying on other routine and emergency services.

Experience gained in world-wide service and constant research are reflected in the six new RCA Transmitter designs illustrated here.

Covering a wide range of frequencies and power, these transmitters will provide reliable operation for your service—whether you need low or high power, low or high frequency, there is an RCA Transmitter to fit your requirements. Check the features against your needs and write us for descriptive data.

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North Atlantic Hearing Told:

Let U. S. Carriers Now Flying Atlantic for Military Continue

Applicants Without Ocean Routes See No Over-Water 'Mystery'

THE Civil Aeronautics Board's second major step in the formulation of post-war international route patterns got underway in Washington last fortnight with eleven applicants, including a steamship company, appearing for the North Atlantic hearing (Docket 855 et al).

As the proceedings moved along at a brisk pace before Examiners Thomas L. Wrenn and F. D. Moran, the applicants drew a pattern of what they considered prerequisite qualifications for the proposed transatlantic operations. These included the operation of over-ocean routes for the military.

Solomon Says 5 Are Qualified

S. J. Solomon, chairman of the board of Northeast Airlines, asserted flatly that the five domestic carriers now engaged in transatlantic operations for the military should be allowed to continue that service on a commercial basis after the war. Applicants not so engaged attempted to establish that there was no "mystery" about over-water flying, and that a company successfully engaged in domestic operations was qualified to fly the Atlantic.

Witnesses for both American Air Lines and American Export Airlines as well as those for TWA brought up the question of Pan American Airways monopoly in international trade, asserting that their proposals offered the answer to that problem.

Traffic estimates for the proposed transatlantic service showed a wide variance with the individual applicant, as did proposed fares, but it was generally conceded by airline applicants that past steamship figures were not a true criteria of what could be expected in over-ocean travel postwar.

The steamship estimates, witnesses brought out, show less business than can be expected by the airlines operating internationally, and it was also pointed out that low fares did not offer the complete answer to air transportation in competing with steamship travel.

John E. Slater, AMEX's executive vice president, voiced this view when he testified that as far as the great bulk of international air travel was concerned "we are not appealing to five and 10 cent traffic. We are talking in terms, if not of much traffic, at least of traffic that is willing to spend the money to obtain the service they want."

Some criticisms of the CAB's four proposed international routes was heard. C. Bedell Monro, Pennsylvania-Central Airlines president, suggested some additions to the CAB's route pattern, and expressed belief that Route IV suggested by the CAB was not economically sound. Generally, the applicants routes follow the four suggested by the CAB.

Cabotage traffic between European terminals was another point that raised some questions. Solomon expressed grave doubts that American flag carriers would be granted such rights on the European continent, while Slater said he did not expect any serious cabotage "blocks," rather that the type of service provided would determine what flag carrier would get the business.

Slater estimated that 50% of the pre-war transatlantic steamship travel would be diverted to the air, but counseled that the airlines must take immediate steps to go after what he termed "induced" business to level off the sharp peaks and valleys of seasonal travel. He explained "induced" travel as primarily business travel, as opposed to tourist traffic.

Fares varied among the applicants from the 3½c per passenger revenue mile to the 9 to 10c proposed by Moore-McCormack. Both situp and sleeper service and combinations of those services were proposed in every type of aircraft ranging from TWA's Boeing Stratoliner to the as yet undisclosed "Type 10" and the airships of U. N. Airships.

United Air Lines, an intervener, reasserted its position that "in our considered opinion . . . the best interests of the United States would be served by a single, strong American flag airline operating in the North Atlantic in competition with the airlines of foreign nations." L. F. Hampel, United witness, declared that "while the volume of transatlantic travel is very large, the great bulk of it consists of passengers who cannot be regarded as potential customers for air transportation."

Other interveners were the Port of New York Authority, Commonwealth of Massachusetts, Boston and Boston Port Authority, Miami Port Authority, City of Philadelphia, Baltimore Aviation Commission, United States Lines and the Department of Justice.

Applicants in the hearing are Northeast, American Export, American, Pennsylvania-Central, Transcontinental and Western Air, U. S. Midnight Sun Airlines, Pan American Airways, Moore-McCormack Lines, National Air Lines, and U. N. Airships.

Open Winter Routes

The CAB has issued an order permitting Pan American Airways and American Export Airlines to inaugurate winter operations on their transatlantic routes because of weather conditions. The orders were effective immediately and extend to Dec. 31. Primarily affected is service between Foynes and Natal, Natal and Lisbon, Lisbon and New York and Foynes and New York.

Florida Case Date Changed

Hearing on the Florida case (Docket 489 et al) will be held in Conference Room A, Departmental Auditorium, at 10 a.m., Nov. 27, CAB Examiner William F. Cusick has announced.

The date for filing of rebuttal exhibits has been extended from Nov. 1 to Nov. 15.

Goodyear Urges CAB Save Place for Airship In Aviation Picture

Goodyear Aircraft Corp., in a letter last fortnight petitioned the Civil Aeronautics Board in the North Atlantic hearing (Docket 855 et al) to "take no action which would prevent or prejudice the eventual inclusion of airships in international air trade . . ."

P. W. Litchfield, president of Goodyear, who submitted the letter, pointed out that while no commercial airships of the dirigible type are now available, such types would be developed and were necessary as a part of the picture to assure the country's future in international air commerce.

Litchfield said that failure of "American enterprise to utilize its helium monopoly and to develop American rigid airship services comparable with those so successfully demonstrated by foreign flag operations" was due primarily to failure of the governmental agencies concerned to "foster this type of equipment for commercial operations."

'Long Non-Stop Range'

He said the CAB in its long-range planning had failed to give consideration to the "large capacity and long-non-stop range possible through operations of large 10,000,000 cu. ft. helium inflated airships." The airship would supplement the airplane and steamship, giving the nation a service none of the three could perform alone, he added.

Litchfield said Goodyear Aircraft Corp., is an aircraft manufacturer and does "not present itself to the Board as a potential operator of overocean airship services."

"From its (Goodyear's) knowledge of airship potentialities, however, the Goodyear Aircraft Corp., is of the opinion that the large rigid airship offers to the United States a form of transportation essential to the development of our foreign commerce."

U. N. Airships, Inc., of Washington, D. C., is an applicant in the North Atlantic hearing seeking more than 41,000 miles of foreign routes over which it proposes to use airships.

Consolidation Order Issued In Texas-Oklahoma Case

The CAB has issued a supplemental order of consolidation in the Texas-Oklahoma case (Docket 337 et al) to include additional applications and amendments and permission to intervene by other carriers. Consolidated in the proceeding were the following applications and amendments:

Lone Star Airlines Co. (Docket 1544), E. R. Leonard (Docket 1579), Texas Bus Lines (Docket 1583), Guy A. Thompson, trustee, Missouri-Pacific Railroad Co. (Docket 1515), amendment No. to application of Texas-New Mexico Airlines (Docket 1053). The CAB also ordered that the Texarkana-St. Louis segment of Route Z of Bowen Airways (Docket 951) be severed from that docket and assigned as part of Docket 1521. Permitted to intervene were Delta Air Corp., Missouri-Kansas-Texas Railroad Co., and Missouri-Kansas-Texas Railroad Co., of Texas.

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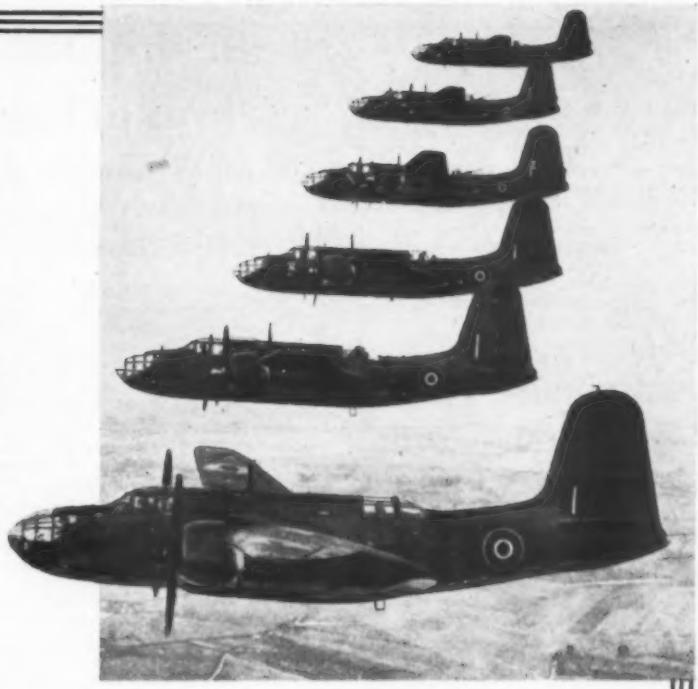
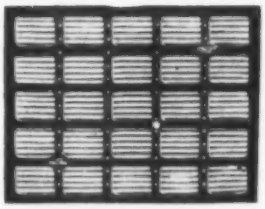


Vokes Air Filter for Aero Engines



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War has proved that efficient filtration is the necessity if mechanism is to give any useful life. Experience gained by prolonged service in battle areas where the appalling conditions caused by dust and dirt thrown up by passing tanks and aircraft taking-off proved such a terrible menace.

This experience we gladly place at the disposal of designers and manufacturers of Aero-engines and aircraft. This experience can be used not only to prolong the life and efficiency of aircraft but help to secure added success and greater safety for our valiant British, American and Allied fighters of the air.

Vokes Air, Oil and Fuel Filters have, when necessary, a standardised 99.9% filtration efficiency—and filtration efficiency you cannot buy on price — practical experience alone can produce it.

The method of installation has a fundamental effect on the performance of the filter, and we design and make the special housing and ducting required to give utmost efficiency.

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All in the Family

G. T. Baker, flying president of National Airlines, had the distinction Oct. 1 of being "king for a day." In connection with ceremonies marking NAL's inauguration of service from Florida to New York, Baker set a record between Jacksonville and N. Y. of 4 hrs., 36 min. The next day, Capt. Skeeter Royal, NAL pilot, flew the route in 4 hrs., 14 min. On Oct. 12, Capt. Clyde Andrews lowered the mark to 3 hrs., 50 min.

DC-4 Exhaust Thrust Being Planned Along With Other Changes

The fact that the commercial DC-4, based upon the Army's C-54B, will utilize some exhaust thrust was disclosed for the first time last fortnight in an exchange of cross examination in the CAB's Latin American hearing. Jet exhaust stacks are among several changes now being incorporated in the C-54B, it was disclosed.

This addition to the DC-4 along with several others, was brought out by Henry J. Friendly, counsel for Pan American Airways, in cross examining William Littlewood, vice president of engineering of American Airlines. Other changes proposed for the DC-4 include a new flap, dump valves and additional wing tanks to be located between the two inboard engines.

Some production factors on the DC-6 were also included in the exchange between Friendly and Littlewood. These include the use of a new type propeller, which could not be fully explained because of security regulations; a new type flap different from that proposed in the DC-4, and changes in design in the tail surfaces to compensate for extensions in the fuselage.

Essair, Inc., Elects Long President; Luckey Now V. P.

W. F. Long, chairman of the Board of Directors, of Essair, Inc., Dallas, Tex. has been elected president of the company to succeed Gen. R. C. Marshall, Jr. L. H. Luckey, a director, has been elected vice president. E. Y. Holt is secretary-treasurer. These officers together with Gen. Marshall, Maj. S. W. Marshall and C. W. Murchison comprise the Board of Directors.

The company, latest to be certificated in domestic airline operations, is now converting two Lockheed Electra planes for commencement of operations over a route from Amarillo to Houston, Tex. via several intermediate points.

PAA Completes Move

Pan American Airways recently completed moving its Pacific coast base from Treasure Island to San Francisco Municipal Airport without the cancellation of a single flight.

Steamship Interests Dominate Late Sessions of Latin American Hearing

'Greatest Number' of Applicants Appear In CAB Proceeding

STEAMSHIP INTERESTS seeking to institute coordinated sea-air service in the Caribbean and South American area dominated the closing sessions of the CAB's Latin American hearing (Docket 525 et al), concluded last fortnight. It was the most expansive hearing from the standpoint of number of applicants to be held before the CAB thus far.

W. R. Grace & Co., set off the hearing's last-minute developments when it had read into the record a petition to the CAB asking that it ask the president to request or require Panagra to file for a through route from South America to New York.

Grace Lines, an applicant in the proceeding, at the same time filed a letter in the proceeding reasserting that as a steamship operator it had the right under the Civil Aeronautics Act of 1938 to enter the air transport field. The Department of Justice, intervener, took the opposing view.

W. R. Grace's petition charged that Pan American Airways was using its ownership of a 50% stock of Panagra to prevent Panagra from making application for a through service into the U. S. Grace owns the other 50% of Panagra which presently operates from the Panama Canal down the West Coast of South America and over the Andes to Buenos Aires.

Cites FDR's Instructions

The Grace petition contended that President Roosevelt's instructions to the CAB to develop comprehensive plans for an integrated air system differentiates its current proceedings from the ordinary route cases and that the objective cannot be attained by haphazard filing of applications by individual carriers.

"In the improbable event that Pan American should resist such an indication by the President, the Board is in a position to resort to one or more of the sanctions placed at its disposal in the Civil Aeronautics Act of 1938," the petition stated. This has been interpreted as belief on the part of W. R. Grace & Co., that the Board has authority to compel sale of some portion of Panagra stock so that the deadlock can be ended.

Recently the Board ruled that in the absence of an application from Panagra itself, it could not compel the carrier to extend its services from the Canal Zone to the U. S. Grace has appealed this decision of the CAB to the courts.

The Grace petition hinted at the alleged inconsistency of Pan American's position, claiming that Pan Am on the one hand seeks concentration of all American-flag international operations in a single company to the exclusion of all others, while at the same time it seeks new gateways to this country and opposes Panagra in its quest for a U. S. terminal.

The Grace petition followed earlier testimony by Harold J. Roig, president of Panagra, who asserted that his company had never been able to file for a certificate for a direct U. S. gateway because one of Panagra's stockholders would not vote to authorize such an application. Roig also testified that Pan American's proposed direct New York-Buenos Aires and Buenos Aires-Manaos "cutoff" would "imperil" Panagra's route program in Latin America.

In both his testimony and at a press conference preceding Panagra's appearance in the hearing, Roig declared that the "consequence of introducing one or more additional American flag services into South America would result in feeble and uneconomic operations." He opposed the applications of Braniff, Colonial, Chicago and Southern, Western Air Lines, and Moore-McCormack Steamship Co.

"Our traffic estimates do not show

The Grace Recommendations

Following are the four recommendations outlined in the petition of W. R. Grace & Co., filed with the Civil Aeronautics Board, which the petitioner requests be presented to President Roosevelt:

"1. The establishment of a through route by Panagra between New York and the west coast of South America is required by the public interest and is an integral part of the postwar air service pattern to be operated by United States air carriers.

"2. Without the establishment of this route, the route between New York and the east coast of South America would have overwhelming advantages to the detriment of air service to the west coast of South America, resulting in disadvantage to and discrimination against the countries on the west coast of South America.

"3. Panagra being the only United States air carrier serving the West Coast of South America should be the carrier authorized to operate the New York-west coast of South America route, inasmuch as it has demonstrated its fitness and ability to operate such a route, and inasmuch as the need for this service can properly be filled only by the extension of Panagra's route to New York.

"4. A New York-west coast of South America service by Panagra is in the public interest to the same extent and for the same reasons that proposals for improved service to the east coast are in the public interest. The Board cannot consistently recommend an improved east coast service operating directly to and from New York without also recommending that Panagra be certificated to operate a similar through service between New York and the west coast of South America

IN 3 weeks Jack & Heintz designed a unique retraction motor for the Air Forces . . . made important improvements in motor performance and life that had never before been thought possible . . . and in 2 more weeks were producing it in production-line quantity at a lower price to the government. When the war is won this Jack & Heintz ability will be available to industry—to help you with better parts or products, engineered and produced with new precision at production-line speed and low cost, to meet your postwar competition. We would like to show you this unique combination at work now. Jack & Heintz, Inc., Cleveland, Ohio, manufacturers of aircraft engine starters, generators, gyro pilots, gyro flight instruments, magnetos, motors.

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enough movement to justify any service in addition to that which Panagra proposes," Roig declared, adding that "anything less than Panagra proposes" would not be adequate for South America. He said none of the domestic applicants "proposes a service either comprehensive in itself or integrated with existing services."

Pan American's monopoly came up for some further discussion during the presentation of Western Air Lines' case for routes between Los Angeles and South America, via Mexico City. Leo H. Dwerlkotte, Western's executive vice-president, said his company opposed the applications of both American Airlines and Pan American.

With reference to Pan American, Dwerlkotte said that the international operator and two of its Mexican subsidiaries "already have a strong monopoly in Mexico," and expressed belief that it would be unsound to give Pan Am a certificate to compete with CMA between Los Angeles and Mexico City.

Granting of American's application, Dwerlkotte said, would serve only to increase the company's "monopoly," giving American "undue preference and an unfair competitive advantage" in domestic and foreign trade. The witness said American's Los Angeles-Mexico City route was 272 miles longer than the one proposed by Western, and he characterized as "negligible" American's investment in its temporary Mexican operation.

Working on Special Plane

Atlantic Gulf and West Indies Steamship Co., not only outlined plans for extensive routes in the Caribbean area, but one witness announced that the company was working on the development of a special passenger plane to better suit the company's needs.

L. D. Parmelee, AGWI's executive vice president, echoed the testimony of other steamship operators in predicting that his company would lose "a lot of business" to the air if it were not permitted to operate a coordinated sea-air service.

Parmelee underwent some stiff cross examination from S. J. Nusbaum, counsel for American Export Airlines, who questioned the witness at length regarding decisions of the Maritime Commission which purportedly held that cargo rates charged by the New York & Puerto Rico Steamship Co., an AGWI subsidiary, were "unreasonably high." Nusbaum also attempted to bring out that certain of AGWI's agreements with other steamship operators were in "restraint of trade," particularly between the U. S. and Puerto Rico. Parmelee denied the allegations.

The AGWI witness was also closely questioned on the fact that its airline applications exceeded the actual operating territory of its ships. In response to questions from Fred J. Knauer, Grace Lines counsel, Parmelee said that in the cases of Venezuela, Colombia, the Netherlands West Indies and Panama, AGWI's proposed air service would be no more detrimental to Grace than a regular airline operator. AGWI does not operate steamer service in those areas.

Until AGWI can secure its own "Skyliners," it will utilize Lockheed Constellations and Curtiss-Wright Commandos over its routes, Parmelee said. Routes to be flown with the Constellations will generally parallel the steamer routes, while operations with the Commandos will serve as feeders.

George B. Horner, AGWI's vice president, said the company proposed to fly non-stop between New York and Havana, New York and San Juan, Balboa, C. Z., and Mexico City, and a "turn-around" service between New York and Bermuda. These proposals represent changes in AGWI's originally proposed route patterns in order to more closely parallel traffic potentials as outlined in the Crozier report in the Caribbean area.

Atlantic Gulf & West Indies Lines Discloses Plans for Specially Designed Overwater Plane

A NEW PLANE, especially designed for overwater hops, has been developed by Lockheed Aircraft Corp. for Atlantic Gulf & West Indies Steamship Lines, the company revealed in presenting its case in the CAB's Latin American hearing (Docket 525 et al.). The plane is known as the "Skyliner."

B. E. Cole, general manager of AGWI's airline division, said the four-engine plane would be capable of carrying 62 passengers at night and 78 passengers during daytime. It would be equipped with six single passenger roomettes, eight two-passenger staterooms, one "deluxe" stateroom, and 36 seats. The plane will have 40% more cubic capacity per passenger than either the Constellation or the DC-6, but will fly at an indicated speed 30 mph. slower than either of those aircraft, Cole said.

The plane, he pointed out, will carry the same engines as proposed for the DC-6 or Constellation, and the plane cost per mile is estimated at $1.80, or approximately 41 cents more than AGWI's estimates for the Constellation. As prepared for night operations, with 62 passengers aboard, the Skyliner will operate for 2.9c per passenger miles, or, with 50% occupancy, 5.8c per mile.

"Our steamship experience on fares for premium stateroom accommodations indicates that stateroom berths (on the Skyliner) will be readily salable at a fare averaging 7c per mile, while the fare for chair passengers would be 4½c per mile, assuming 50% occupany, to obtain a 'break even' revenue without express, excess baggage or mail," Cole said.

The plane would be used for night flights between New York and Havana, New York and San Juan. P.R., and from Balboa, C.Z., to Mexico City.

Cole said AGWI probably would use both the DC-6 and the Constellation in its operations pending delivery of the Skyliner, but he pointed out that the Skyliner was specifically designed to "our needs." His participation in designing the plane has been limited to its passenger accommodations, Cole said. In addition to the private accommodations, the Skyliner would include a lounge-bar convertible to a dining salon seating 18 at tables, pressurized cabins, and full air conditioning.

The AGWI plane would have a normal cruising speed of 232 mph. at 17,000 feet; a cargo capacity with full passenger and baggage loads, with five hour fuel reserve and 1,300 mile range, of 4,000 pounds with 62 passengers, and 2,000 pounds with 78 passengers; a maximum range of 3,450 miles and a gross take-off weight of 100,000 pounds. Preliminary development work, construction and testing of the prototype, and delivery of service aircraft is expected to require from three to five years, Cole said. In addition to Lockheed, he added, engineers at Boeing and Douglas Aircraft Companies have been asked to submit designs on the plane.

NATS Agreements With PAA, AMEX Terminate Dec. 31

MILITARY air transport agreements between Naval Air Transport Service and its two contract operators, Pan American Airways (Atlantic Division) and American Export Airlines, have been terminated, effective Dec. 31, 1944.

These terminations are due to anticipated reductions in the Navy's air transportation requirements to the European theatre. The contracts, which have been in effect nearly three years, were entered into with PAA and AMEX, to move strategic cargo and passengers by air at a period when surface shipments were subject to long delays as well as submarine attacks.

Although their military service will be reduced now and will terminate at the end of the year, both companies will continue the commercial services which they now maintain across the Atlantic. "These services rendered under these contracts have been of great value in the war effort," Vice Admiral Aubrey W. Fitch, USN, Deputy Chief of Naval Operations (Air) stated.

The two companies are cooperating with the War Manpower Commission in placing with their other divisions or affiliated companies and with other essential industries as many as possible of the employes whose services will not be required for the commercial operations. To this end, referral of employes is being handled by the U. S. Employment Service.

Approximately 1,500 employes will be affected by the adjustment. It is anticipated that any layoffs will be gradual, permitting an orderly transition of workers, and that a minimum of inconvenience will be involved since the great majority are skilled mechanics whose services are much in demand by other war industries.

These terminations were reviewed by the Production Executive Committee staff of the WPB, which comprises representatives of WMC, Office of Labor Production, the military services, Smaller War Plants Corp. and various branches of WPB. This committee was established to insure an orderly and systematic handling of cutbacks and terminations.

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STAINLESS STEEL WORM-DRIVE HOSE CLAMPS

NEXT month, December, we expect to start production deliveries of our new Stainless Steel AERO-SEAL Hose Clamps. At first, these will be available only in the most popular sizes —M12, M16, M20. We suggest prompt placement of orders to assure earliest possible deliveries . . . The new Stainless Steel AERO-SEAL Clamp has the obvious advantage of being made of rust-resistant material throughout. In addition, it has inherently greater strength than a clamp made of carbon steel, and we have also made some further design improvements which we will discuss in an advertisement next month. Remember — *we originated* the AERO-SEAL Worm-Drive design and thus offer you the background of longest experience with this new and better type of clamp. Your inquiries are invited and will be answered promptly.

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Hurtling 11,500 miles in 84 hours, Pan American World Airways' "Cannonball" express rushes "hot" priority cargo to the orient. The thundering planes swoop down by the Amazon, span the Atlantic to the Gold Coast, land again by the Nile, dip onto Arabian sands, and complete their flight in India.

At each hurried stop, Aerols* soak up landing shock, help the plane come in safely, and protect vital cargo. Thus, Aerols contribute substantially to the success of the fastest express service in history.

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Essair Wins Right to Intervene In Court Action Filed by Braniff

Argument on Plea To Void CAB Order Likely This Month

THE U. S. Court of Appeals, District of Columbia has granted the petition of Essair, Inc., to intervene in an action brought by Braniff Airways, Inc., which asks the court to set aside an order of the Civil Aeronautics Board authorizing Essair to operate air routes in Texas on a temporary certificate.

It is expected that oral argument will be set for sometime in November. All parties to the action have filed briefs with the court.

In its petition, Braiff Airways assigned 12 points of error. It attacked the Board's decision specifically claiming Essair had not met the test involving "fitness and ability" to operate the airline. It held that the Board's decision as to "fitness and ability" was based on testimony taken in 1940 and that the record is devoid of proof touching on this phase of the company's qualifications.

When Essair filed its petition to intervene, Braniff Airways took the position that it would not oppose the petition if intervention were limited to the issues in the record before the Board. The court's order granting Essair permission to enter the case does contain this restriction. Thus, Essair will be prevented from presenting proofs or information regarding its financial condition as of today and the equipment and facilities which it has for operating the route between Amarillo and Houston.

Essair, in a brief filed by its counsel, O. R. McGuire, contends that the plaintiff did not file its petition for court review within the time limit prescribed in the Board's Rules of Practice and Essair claims further that the court does not now have a legal right to entertain Braniff's petition.

In defense of the Board's action, Essair contends that CAB had the right to issue a temporary certificate on an experimental or any other basis and that the Board's conclusion that Essair is "fit, willing and able" is supported by "substantial evidence."

George C. Neal, general counsel for CAB, states in his brief: "It is well established that a wide latitude is vested in administrative agencies in exercising their discretion as experts in particular fields and in applying the Acts under which they are established . . . The Board's determination of the factors entering into the phrase "fit, willing, and able" as applicable to air transportation is clearly within the permissable range of the statutory language and, therefore, must be sustained by the courts."

'Fit, Willing, Able'

Philip S. Peyser, Braniff counsel, contends in his brief that "the statute requires that an applicant be fit, willing and able to perform the proposed air transportation, at the time that the certificate is issued. The Board failed to make any findings or consider the evidence showing that Essair, Inc., is a defunct corporation, without assets, without equipment, and without experienced available personnel."

The case is attracting considerable interest in Government and aviation circles. It represents the second bona fide appeal which has been taken from a Board decision involving the granting of new route certificates. The other action was based on a petition by Pan American Airways, Inc., in connection with the Board's decision to grant a temporary certificate to American Export Airlines, Inc., then a subsidiary of American Export Lines, Inc., the steamship company. In this action, the Board's decision was generally upheld by the court.

There are some Government attorneys who believe the case in question is "touch and go." Legal technicalities have an important part in this case and liberal or literal construction by the courts of the applicable statutes and regulations will probably dictate the decision.

Essair is the first domestic company to be certificated outside of the Grandfather clause of the Civil Aeronautics Act of 1938. It operated an air transport route in Texas for several months in 1939 and in March of 1939 filed its application for a permanent certificate. Due to delays in procedures, its then counsel, allegedly wihout authority of Essair's officers, withdrew the application for a temporary certificate, believing it has been stated, that the delay in decision would warrant the Board in granting a permanent certificate if any type of certificate was to be given. In the meantime, Pearl Harbor occurred and the Board froze action on all certificate procedures. When procedures were "unfrozen" Essair's new counsel petitioned for immediate decision notwithstanding the Board's plans for an overall study of the Local-Feeder-Pickup question. This petition was granted and on Dec. 8 the Board gave Essair the temporary certificate.

Braniff Forms New Cargo Division; Springer Head

Braniff Airways announces the formation of a new air mail and cargo division to be headed by Guy M. Springer, Jr., assistant to C. E. Beard, vice president-traffic. The new department will set up a program of cargo service to handle all classes and types of commodities lending themselves to effective and economical air transportation.

Springer

All types of cargo service, including airport to airport, store door pickup and delivery and shipments of plane load and less than plane load lots will be provided with "appropriate tariffs, rates and facilities." The new service will also embrace air express and air cargo services over Braniffs proposed international routes in Latin America.

Expansions in its mail handling facilities is being planned to include first class mail and air parcel post in the event Congress legislates for such service, the Braniff announcement says. The company will also announce within the next 30 days a new international air express service, which is being created with pickup and delivery service throughout the country by means of the existing domestic air express systems.

New Northwest Agency

The Newell-Emmett Company, nationally known advertising agency with headquarters in New York City, has been appointed to handle the account of Northwest Airlines, Croil Hunter, President and general manager of Northwest, announced today. The arrangement becomes effective Dec. 1.

New Berth for Mars—The Navy has constructed this special U-shaped seaplane dock at the Alameda, Calif., Naval Air Station to facilitate the handling of the tremendous quantities of mail and cargo carried by the Martin Mars. Based on standard Navy pontoons, the new dock makes possible a five-day turn around operation between Alameda and Pearl Harbor.

XUM

Airline Commentary

It's interesting to hear an Englishman, on his first trip to this country, talk about the U. S. airlines . . . Things that are commonplace to us are new and interesting to him . . . We were in a group of Washington aviation writers that met with Sam Mash, of the British Ministry of Aircraft Production, last fortnight . . . Mash was paying his first visit to the U. S. and had just flown from New York to Washington, his first trip on a U. S. airline . . . He was very impressed . . . "We left on schedule and arrived on schedule," he said. "It was my first night flight—there are no night schedules in England now, you know. There was a very nice stewardess aboard. She asked me if there was anything I would like to have and I said yes, I would like a drink of water—and I got a drink of water right away. I was impressed with the literature in the seat pockets on the airplane. For instance, there was one booklet about 'Your Majesty' (guess which airline he was riding). I'm taking the whole folder back to England with me" . . . There were many other things that impressed him too . . . Maybe our airlines aren't so bad after all . . .

●

A very interesting part of airline operations is the arrangement made by airlines with the airports they use . . . Airline officials, of course, are familiar with the system under which their companies pay for use of airport facilities, but we thought that maybe some of you who may be a little further down the line might be interested . . . An airline, of course, pays rent for the space it uses at an airport, but did you know that there is also a payment involved every time one of its planes lands? . . . This payment generally works on a sliding scale; for example, $100 a month for the first landing, $75 for the second, and so on down into the cheaper brackets . . . This fee covers not only use of runways but also other airport facilities, such as radio, etc. . . So the next time you're at an airport watching the airplanes land, you can figure that every landing is costing money . . . Fees at airports are becoming one of the airlines' most important problems . . . In the early days of aviation, cities were willing to give cheap rates in order to get service and to encourage the airlines . . . Now, however, city officials are becoming more interested in seeing their airport either break even or operate in the black . . . Thus, almost every time a lease is renegotiated it's costing the airlines more money . . . The airlines, of course, want to make the best deal possible but they don't seem to be trying to get something for nothing . . . Most of them realize that airport rates in the past have been a little low and that a readjustment is inevitable . . . In other words, they want to pay their fair share, but they don't want to pay practically all of the airports' bills when there are other activities on the fields that should also be kicking in . . . To the credit of airport managers (who lead a pretty hard life), let it be said that the most enterprising ones go along with this idea . . . The champion revenue-getter among the airport managers is Dudley Steele, of Lockheed Air Terminal, who really knows how to make an airport pay . . . And we understand that only about 8% of that revenue comes from the airlines . . . Last year, Steele's airport grossed $3,700,000, of which $2,200,000 came from aviation gas and oil sold to users of the airport other than airlines, $900,000 from restaurants and bars, $300,000 from parking, garage and service station, and $300,000 miscellaneous

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This is a stirring saga of how air transportation saved the day . . . Bob Averill of PCA, Bill Woolsey of American, Walter Swan of United and some other airline representatives were having a confab in Cleveland recently . . . Nowhere in the city, so the story goes, could they buy any cigarettes of any kind . . . They tried cigars (the cheapest available were something like 33c each) and one of them even bought a pipe, thereby acquiring a nice case of tonguebite . . . Finally, in desperation, Averill sent an SOS to Washington for cigarettes . . . V. K. Stephens, PCA station manager, performed miracles and secured a carton, which was sent on the next PCA trip . . . Averill thereupon became the most popular man in the crowd . . . Air transportation—it's wonderful . . .

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From Delta Air Lines' lively houseorgan we learn that the Love Field terminal at Dallas was thrown into an uproar recently when a female passenger checked in for a flight barefoot, with her shoes and stockings in her hand . . . She was obviously under the "affluence of incohol" and when informed that it would be impossible for Delta to transport her, she sat down on the baggage scale and wept bitter tears . . . This we would liked to have seen . . .

●

Those of you who have visited Washington National Airport to look at the pretty airplanes are no doubt familiar with the observation deck . . . You may even have deposited your dime in the slot, passed through the turnstile and on to the deck . . . We've often wondered how many people paid their money to take a look . . . And now comes the annual report of the airport and reveals that in the fiscal year 1944 the take from the turnstiles was $14,359 . . . If our arithmetic is correct, 143,590 people contributed . . . Which ain't bad . . .

Eric Bramley

Recent CAB Orders Affecting Air Carriers

3181—Granting Carolina Airways leave to intervene in Docket 1596.

3182—Denying petition of United Air Lines in West Coast case (Docket 250 et al).

3183—Approving agreement between C&S and PCA at Chicago airport.

3184—Approving agreement between PCA and Northwest Airlines at Milwaukee.

3185—Approving agreement between Braniff Airways and C&S at Houston, Tex.

3186—Approving interlocking relationship of Jack Frye as president and director of TWA and director of TACA Airways, S. A.

3187—Authorizing Inland Air Lines to temporarily suspend passenger service at Spearfish, S. D.

3188—Dismissing application of Puget Sound Airways, Inc. (Docket 1402).

3189—Approving interlocking relationship of E. Lee Talman as director and executive vice president of TWA and director of Air Cargo, Inc.

3190—Withholding from public disclosure certain exhibits of public counsel in hearing of Alaska Airlines and Woodley Airways (Dockets 864, 889, 890).

3191—Approving agreement between Braniff and Eastern Air Lines for services at San Antonio, Tex.

3191—Denying petition of National Airlines for rehearing on mail pay. (Docket 824).

3197—Permitting City of Philadelphia and Boston Port Authority to intervene in North Atlantic case. (Docket 855 et al).

3198—Denying petitions of American, Mid-Continent and Eastern Air Lines for rehearing, reargument and reconsideration in Docket 303 et al.

3199—Approving interlocking relationships of L. H. Dwerlkotte, Charlie N. James, Thomas Wolfe, Paul E. Sullivan, J. J. Taylor, William A. Coulter to serve as officers of Western and Inland Air Lines.

3200—Consolidation of TWA application (Docket 1637) in West Coast case (Docket 250 et al).

3201—Dismissing application of Bremerton-Tacoma Stages, Inc. (Docket 1294).

3202—Supplemental consolidation of applications of Lone Star Airlines, E. R. Leonard, Texas Bus Lines, Missouri-Pacific Railroad Co., Texas-New Mexico Airlines in Texas-Oklahoma case (Docket 337 et al), and permitting Delta Air Corp., Missouri-Kansas-Texas Railroad and Missouri-Kansas-Texas Railroad of Texas to intervene.

3203—Granting City of Springfield, Mo., permission to intervene in Docket 651 et al.

3204—Denying request of Eastern Air Lines for consolidation of application under Docket 1595 with National Airlines under Docket 1596.

3205—Amending certificate of National Airlines to include Lawrence, Mass., as intermediate point between Boston and Portland, Me., on Route 27.

3209—Withholding from public disclosure certain exhibits of public counsel dealing with consolidated income statement of United Fruit Co., in Docket 525 et al.

3210—Approving acquisition of TWA by Hughes Tool Co.

17th PAA Anniversary

Pan American Airways recently observed the 17th anniversary of its entry into the international field. On Oct. 19, 1927 a Pan American tri-engined Fokker took off from the Key West, Fla., airport for Cuba, marking the linking of U. S. and points in the Caribbean Sea and southern hemisphere. Since that day, Pan American has pioneered routes over the seven seas.

Scintilla "sparks" the finest

- FRANKLIN AIRCOOLED
- ALLISON
- CONTINENTAL
- JACOBS
- LAWRANCE
- LYCOMING
- PRATT & WHITNEY
- RANGER
- PACKARD
- WARNER
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Outstanding performance has made Bendix Scintilla aircraft ignition the first choice of the Country's leading aircraft engines, including Franklin Aircooled Engines—dependable power for today's warplanes—tomorrow's personal planes.

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SCINTILLA MAGNETO

DIVISION OF **Bendix** AVIATION CORPORATION
SIDNEY, N. Y.

CAB Docket Section Reports:

Number of Applicants Seeking Routes Totals More Than 370

MORE THAN 370 applicants currently are listed with the Civil Aeronautics Board as seeking certificates of convenience and necessity for domestic, international, and Alaskan service, according to an Oct. 1 compilation released by the Docket Section. The compilation also shows which companies now hold foreign air carrier permits issued by the CAB.

Following is the complete list of applicants with presently certificated carriers indicated by asterisks:

A

Adams Enterprises, Philadelphia.
Acme Air Express, Inc., New York.
Aero Pickup Service Corp., Lake Worth, Fla.
Air Freight Forwarders, Inc., Chicago.
Air Transportation Company, Brooklyn, N. Y.
Aircar Service Company, Pittsburgh.
Aircraft Sales Company, Fort Worth, Tex.
Airdrome Transport, Burbank, Calif.
Airways Freight, Inc., Chicago.
Airway Motor Coach Lines, Inc., Salt Lake City.
* All American Aviation, Inc., Wilmington, Del.
* All States Freight, Inc., Akron, O.
All Virginias Air Feeder Lines, Washington, D. C.
* American Airlines, Inc., New York.
* American Export Airlines, Inc., New York.
American President Lines, Ltd., San Francisco, Calif.
American South African Line, Inc., New York.
Arkansas Motor Coaches, Ltd., Inc., North Little Rock, Ark.
Arkansas Valley Airlines, Van Buren, Ark.
Armored Motor Service Co., Inc., Memphis, Tenn.
Asbury Park-New York Transit Corp., Keyport, N. J.
Associated Truck Lines, Inc., Grand Rapids, Mich.
Atlantic and Carolina Airways Co., Kinston, N. C.
Atlantic Gulf & West Indies Steamship Lines, East River, N. Y.
Austin Airlines, Austin, Tex.
Automatic Air Mail, Inc., Lost Nation, Ia.
Automobile Air Freight Corp., Detroit.
Aviation Enterprises, Ltd., Houston, Tex.

B

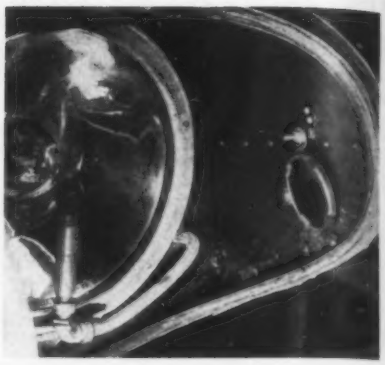
B & W Lines, Inc., Framingham, Mass.
Baldwin Transportation Corp., New York.
Beatus, William, Nogales, Ariz.
Bekins Van Lines Co., Omaha, Nebr.
Belt Aviation Inc., Chicago.
Big Horn Airways, Sheridan, Wyo.
B.K.S. Flying Service, Fairview, Pa.
Blue Line, The, Springfield, Mass.
Blue Ridge Air Lines, Inc., Harrisonburg, Va.
Blue Ridge Lines, Inc., Hagerstown, Md.
Bos Air Cargo, Marshalltown, Ia.
Bowen Airways, Fort Worth, Tex.
Bowman, F.X., Girard, Pa.
Brady Transfer & Storage Co., Fort Dodge, Ia.
* Braniff Airways, Inc., Dallas, Tex.
Bremerton-Tacoma Stages, Inc., Bremerton, Wash.
Brinckerhoff Flying Service, College Park, Md.
Brooks Air Line, Paducah, Ky.
Buffalo Aeronautical Corp., Buffalo, N. Y.
Burlington Transportation Co., Chicago.

C

Callinicos, James N., New York.
Cambridge Taxi Co., Boston, Mass.
Capitol Transfer & Storage Co., Charleston, W. Va.
Carolina Air Lines, Inc., Wilson, N. C.
Carolina Airways, Morehead City, N. C.
* Caribbean-Atlantic Airlines, Inc., San Juan, Puerto Rico.
* Catalina Air Transport, Los Angeles.
Central Airlines, Inc., Oklahoma City, Okla.
Central States Aviation Corp., Sioux City, Ia.
Century Aviation Co., Wayne, Neb.
Chalfant, Read Quenton, Crafton, Pittsburgh.
Checker Taxi Co., Boston.
Chesapeake Airline, Alexandria, Va.
Chicago & Calumet District Transit Co., Inc., Hammond, Ind.
* Chicago & Southern Air Lines, Inc., Memphis, Tenn.
Chicago, Black Hills and Western Air Lines, Rapid City, S. D.
Cincinnati, Newport & Covington Railway Co., Covington, Ky.
Clark, Sterling Moore, Pine Bluff, Ark.
Clear Ridge Aviation, Inc., Omaha, Nebr.
Cloud Airlines, Helena, Mont.
Coast Air Express, Oklahoma City, Okla.
Coast Aviation Corp., Dos Palos, Calif.
Coastal Tank Lines, Inc., York, Pa.
* Colonial Airlines, Inc., New York.
Colorado Airlines, Inc., Durango, Colo.
Commercial Carriers, Inc., Memphis, Tenn.
Community Air Service, Inc., Ft. Worth, Tex.
Consolidated Airlines, Inc., Kansas City, Mo.
Consolidated Bus Lines, Bluefield, W. Va.
* Continental Air Lines, Inc., Denver, Colo.
Cotton Belt Airlines, Inc., Pineville, Ky.
Countryman and MacDonald, Chicago.
Courier Express, Inc., Logansport, Ind.
Cowell Coach Lines, Inc., Taunton, Mass.

D

Dach, Max, Flushing, Long Island, N. Y.
Dade Brothers, Inc., Mineola, Nassau County, N. Y.
Damon, Joseph K., Brooklyn, N. Y.
Dayton & Western Ohio Airlines, Inc., Dayton, O.
* Delta Air Corporation, Atlanta, Ga.
Denco Bus Lines, Inc., Washington, D. C.
Denver Chicago Trucking Co., Denver, Colo.
Denver & Rio Grande Western R. R. Co., (Trustees), Denver, Colo.
Desert Airways, Inc., Ltd., Los Angeles.
Des Moines Flying Service, Des Moines, Ia.
Dilliner, W. J., Transfer Co., Pittsburgh.
Dixie Air Transport Co., Inc., Baton Rouge, La.
Dixie Airways, Leland, Miss.
Dixie Motor Coach Corp., Dallas, Tex.
Duncan Air Transport, Duncan, Okla.
Durham-New York Helicopter Service, Inc., East Durham, N. Y.



Seeing is Believing— Pennsylvania-Central Airlines has mounted a mirror in each wing light of its planes, adjusted to show if the landing gear is down. Besides this visual check of his landing gear, the PCA captain also has a signal lamp on the instrument panel which tells him whether the wheels are down, but seeing is believing, PCA veterans say.

Pan American's 'Type 10' Compared

Some of the specifications and operational data of Pan American Airways 149-passenger "Type 10" airplane, which would be used in proposed long-range over-water flights, have been released. Pan American spokesmen, however, declined to name the manufacturer working on the aircraft, indicating that such an announcement may be made during the course of the CAB's North Atlantic hearing or during a press conference to be held in Washington in the near future.

Following are the specifications for the "Type 10" and comparisons with the DC-7, the Lockheed Constellation, DC-6, and DC-4:

	PAA '10'	DC-7	CONSTELLATION	DC-6	DC-4
GROSS WEIGHT	184,000 lbs	162,000 lbs	96,100 lbs	80,500 lbs	71,300 lbs
POWER-TAKE-OFF	14,000 hp	14,000 hp	10,400 hp	8,400 hp	5,800 hp
NORMAL	11,200 hp	11,200 hp	9,000 hp	6,800 hp	1,100 hp
CRUISING SPEED	288 mph at 64.3% of hp at 25,000 ft.	296 mph at 64.3% of hp at 20,000 ft.	322 mph at 62% of hp at 20,000 ft.	325 mph at 62% of hp at 20,000 ft.	239 mph at 60% of hp at 10,000 ft.
PASSENGERS CARRIED	149 maximum Trans-atlantic 128 day, 119 night (30 berthed)	108 maximum Trans-atlantic: 95 day, 79 night (20 berthed)	56 maximum Trans-atlantic: 40 day; 30 berthed	50 maximum Night: 24 berthed. 2 sit up.	44 maximum Night: 22 berthed.
CARGO CAPACITY	2,082 cu. ft.	1,169 cu. ft.	882 cu. ft.		
CREW	11	10	6	6	5
COST	$2,029,488.00	$1,412,488.00	$727,288.00		
OPERATING COST PER AVAILABLE TON MILE					
2,000 (Eire-Newfoundland)	10.9c	13.7c	16.9c	20.6c	15.7c
2,500	13.1c	13.8c	17.0c	25.3c	15.8c
3,000	14.3c	14.0c	17.6c	Range limited to 2,715 miles	19.1c
3,500 (Westbound nonstop 35 mi. h.w.)	17.4c	16.9c	49.3c		27.2c

This is not an actual combat photograph—it is drawn to illustrate the accuracy with which a Black Widow can strike in the dark. Bomber shown exploding from hit gasoline tank is the Messerschmitt Me 210

It is designed to carry 2 or 3 specialists . . . to fly fast and range far . . . to locate and destroy the enemy in darkness or daylight

NORTHROP BLACK WIDOW P-61 NIGHT FIGHTER

NORTHROP AIRCRAFT, INC.
NORTHROP FIELD, HAWTHORNE, CALIF.
MEMBER AIRCRAFT WAR PRODUCTION COUNCIL, INC.

The Black Widow may fairly be called a revolutionary new warplane.

It is big as a medium bomber . . . swift as a fast pursuit . . . built to blast out of the sky anything that can fly.

Yet with all its heft and speed, the Black Widow is nimble as a cat . . . it is one of the most maneuverable of all U.S. planes in use today. This superior handling ability comes in large part from the "retractable ailerons" designed into each wing. Retractable ailerons enable the Black Widow to make tighter turns at high speed without spin or stall.

As our Army's first airplane designed especially as a *night fighter*, the Northrop Black Widow is equipped to stalk down night-hidden enemy planes. And it packs enough 20 millimeter cannons and .50 caliber guns to rip apart anything it locates.

The Black Widow is the most recent evidence of Northrop's talent in aerodynamic development and production. This ability will continue to help the country throughout the war — and in the peace to come.

E

Eagle Airlines, Inc., St. Louis.
* Eastern Air Lines, Inc., New York.
Empire State Airlines, New York.
* Essair, Inc., Dallas, Tex.

F

Fahey, Aloysius John, Washington, D. C.
Faster Flying Freight, Inc., Dallas, Tex.
Fidelity Fireproof Warehouse, New York.
Filene's, Wm., Sons Co., Boston, Mass.
Fish Airlines Corp., New Bedford, Mass.
Fitchburg & Leominster Airways, Inc., Fitchburg, Mass.
Fogarty, Arthur A., Springfield, Mass.
Foreman, John W., Pocatello, Idaho.
Freight-Flite, Inc., Baltimore, Md.
Frisco Transportation Co., St. Louis, Mo.
Frontier Airways, Inc., Denver, Colo.
Fullwood & Roquemore, McAllen, Texas

G

Gateway City Transfer Co., Inc., La Crosse, Wis.
Gilbertville Trucking Co., Inc., Gilbertville, Mass.
Gillespie Airways, Nashville, Tenn.
Glose, Arthur W., Allentown, Pa.
Gordon, Thomas E., Orlando, Fla.
Gordons North South Air Lines, Inc., Memphis, Tenn.
Grace Line, Inc., New York.
Grays Harbor Lines, Aberdeen, Wash.
Great Lakes Storage & Moving Co., Cleveland, O.
Great Plains Airways, Inc., Amarillo, Tex.
Greyhound Skyways, Inc., Chicago.
Gulf Airlines, Houston, Tex.

H

Hann, Wm. Edward, Detroit.
Hannaford Airlines, Inc., Winnetka, Ill.
Hansen Flying Service, Logan, Utah.
Harris, Miss Angeline, Charlotte, N. C.
* Hawaiian Airlines, Ltd., Los Angeles, Calif.
Hawthorne Airways, Orangeburg, S. C.
Healzer Cartage Co., Hutchinson, Kans.
Hecht Co., Inc., Washington, D. C.
Heiser, Arthur J., Floral Park, Long Island, N. Y.
Hinkle, Lieut. Joe T., Norman, Okla.
Hogan Air Lines, Scotts Bluff, Neb.
Houston Airways, Inc., Houston, Tex.
Huckabee Transport Corp., Columbia, S. C.
Humboldt Air Lines, Boston, Mass.
Hunter, W. A., Jr., Columbia, Tenn.
Hylan Flying Service, Inc., Rochester, N. Y.

I

Illinois Air Lines, Inc., Chicago.
Indiana Motor Bus Co., Plymouth, Ind.
Indianapolis Railways, Inc., Indianapolis, Ind.
* Inland Air Lines, Inc., Casper, Wyo.
Intermountain Air Lines, Grand Junction, Colo.
Interstate Busses Corp., Springfield, Mass.
Interstate Transportation Co., Inc., Taunton, Bristol Co., Mass.
Iowa Airplane Company, Inc., Des Moines, Ia.

J

Johnston, Leland Perks, Corpus Christi, Tex.

K

Kansas Aviation Company, Manhattan, Kans.
Kansas City Airways, Inc., Kansas City, Mo.
Kaufmann and Baer Company (Gimbel Brothers) Pittsburgh.
Keeshin Air Freight, Inc., Chicago.
Kentucky-Tennessee Airlines, Lexington, Ky.
Knowles Vans, Inc., Omaha, Neb.
Kratz Corporation, St. Louis, Mo.
Kugel, Richard Charles, Lt. Col., New York.
Kunuth, Frank L., Detroit, Mich.

L

Land & Water Air Service, Pittsburgh.
Leak, J. I., Ocala, Fla.
LeFors Brothers, Oxford, Miss.
Leonard, E. R., Hobart, Okla.
Lehigh Aircraft Co., Allentown, Pa.
Lincoln Air Lines, Inc., New York.
Logan Williamson Bus Co., Logan, W. Va.
Lone Star Airlines, Co., Marshall, Tex.
Lone Star Airways, Inc., San Antonio, Tex.
Lomax, W. Dev., Los Angeles, Calif.
Los Angeles Airways, Inc., Los Angeles, Calif.
Ludwig Airline Feeder Service, St. Petersburg, Fla.
Lyon Van & Storage Co., Los Angeles, Calif.

M

McCornock, Maxwell E., Iron River, Mich.
McLendon & Blount, Union Springs, Ala.
Magann, Frank P., Belmont, Mass.
Magnolia Airways, Magnolia Beach, Tex.
Mandel Brothers, Inc., Chicago.
Manhattan Storage and Warehouse Co., New York.
Marion Trucking Co., Inc., Marion, Ind.
Massey and Ransom Flying Service, Inc., Ft. Collins, Colo.
Matson Navigation Co., San Francisco, Calif.
* Mayflower Airlines, Inc., Worcester, Mass.
Mercury Development Corp., Wash., D. C.
Metropolitan Airways, New York.
* Mid-Continent Airlines, Inc., Kansas City, Mo.
Mid-West Airways, Los Angeles.
Midwest Airways, Inc., Cudahy, Wis.
Midwest Haulers, Inc., Toledo, O.
Milky-Way Transport Corp., McKinney, Collin County, Tex.
Milwaukee Boston Store, Inc., Milwaukee.
Mohawk Lines, Inc., Cresskill, N. J.
Moore-McCormack Lines, Inc., New York.
Mountain Airways Co., Combs, Perry County, Ky.
Mountain States Aviation, Inc., Denver.
Mutual Trucking Co., Toledo, O.

N

* National Airlines, Inc., Jacksonville, Fla.
National Air Transport Co., Detroit, Mich.
Neal, Jack and Son, San Antonio, Tex.
Nebraska Air Lines, Lincoln, Neb.
Neptune Storage, Inc., New Rochelle, N. Y.
Nevada-Pacific Airlines, Inc., Lovelock, Nev.
New England Airlines, Inc., New Haven, Conn.
New Mexico Airlines, Roswell, N. M.
New York and Bermudian Air Line, Hoboken, N. J.
New York-Los Angeles Airways, Long Beach, Calif.
North Central Airlines, Chicago.
North American Airlines Ltd., Wash., D. C.
North Little Rock Transportation Co., Inc., Little Rock, Ark.
* Northeast Airlines, Inc., East Boston, Mass.
Northern Airlines, Chicago.
Northern Michigan Airlines, Traverse City, Mich.
* Northwest Airlines, Inc., St. Paul, Minn.
Norseman Air Transport, Longmeadow, Mass.
Nu-Planes Flyaway Service, Inc., Wash., D. C.

O

Ohio Airlines, Cincinnati, O.
Oklahoma Airways, Inc., Oklahoma City, Okla.
Olson Steamship & Navigation Corp., Pasadena, Calif.
Ong Aircraft Corp., Kansas City, Mo.
Oregon Airways, Inc., Portland, Ore.
Otto Aviation Corp., Newark, N. J.
Owen Co., Roy F., Portland, Ore.
Owosso Flint Bus Lines., Inc., Owosso, Mich.
Ozark Air Lines, Inc., Springfield, Mo.

P

P & B Transfer and Storage Co., Memphis, Tenn.
P-T Air Service, Inc., Hays, Kans.
Pacific Northwest Airways, Portland, Ore.
Page, Clarence E., Oklahoma City, Okla.
Page Airways, Inc., Rochester, N. Y.
Palmer Airlines, Great Barrington, Mass.
* Pan American Airways, Inc., New York.
* Pan American-Grace Airways, Inc., New York.
Pan Atlantic Steamship Corp., Mobile, Ala.
Parks Air College, Inc., East St. Louis, Ill.
* Pennsylvania-Central Airlines Corp., Wash., D. C.
Pennertz, Donald W., Alexandria, Minn.
Philadelphia & Eastern Airlines, Inc., Lancaster, Pa.
Picknelly, Peter, Springfield, Mass.
Piedmont Aviation, Inc., Winston-Salem, N. C.
Pierce Auto Freight Lines, Inc., Medford, Oregon
Pioneer Airlines, Washington, D. C.
Plaza Express Co., Inc., St. Louis, Mo.
Prairie Airlines, Inc., Starkville, Miss.
Prairie Airways, Inc., Alliance, Neb.
Producers Air Lines, Inc., Toledo, Ohio
Public Service Interstate Transportation Co., Newark, N. J.
Pueblo Air Service, Pueblo, Colo.
Puget Sound Airways, Seattle, Wash.
Putnam Airlines, Putnam, Conn.

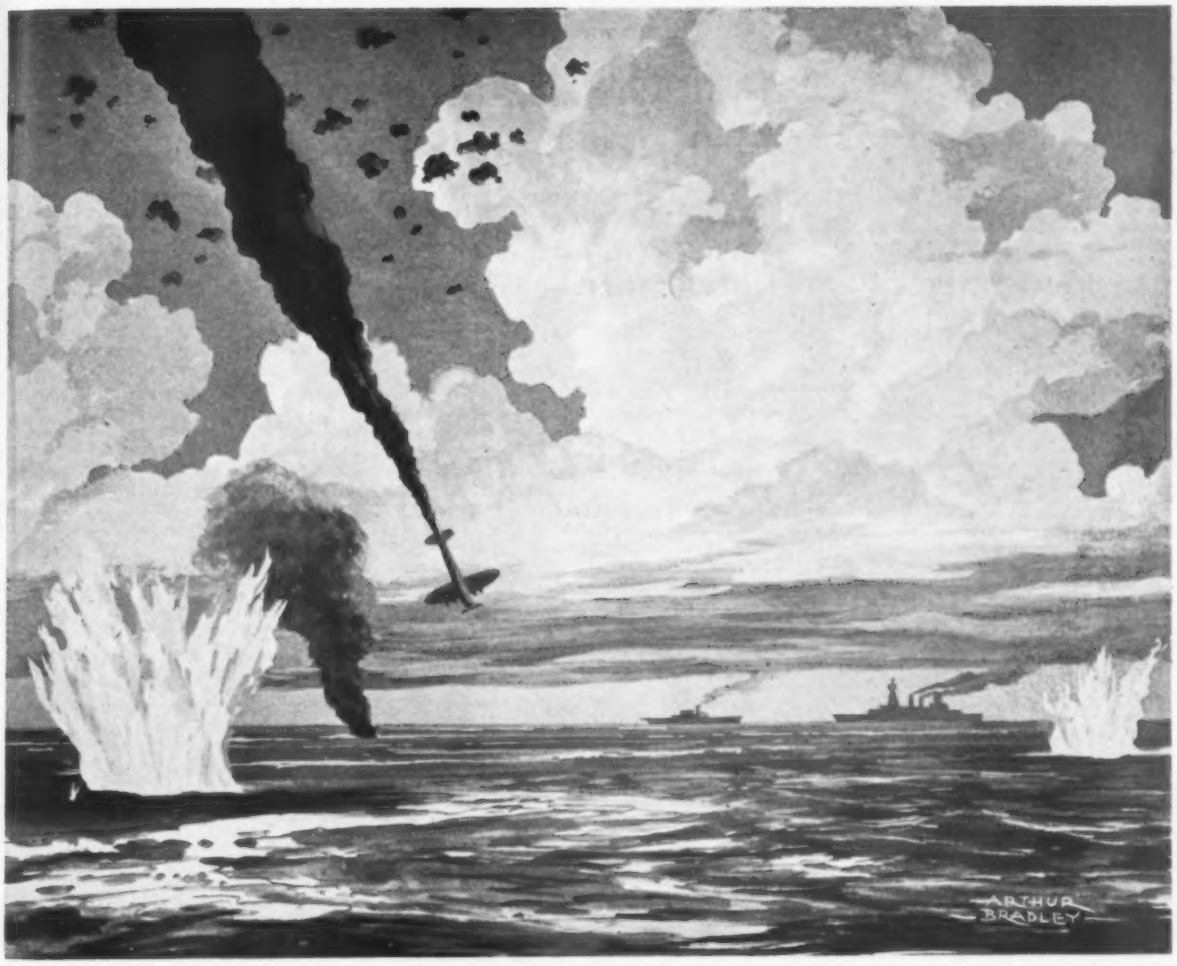
R

Racine Flying Service, Inc., Racine, Wis.
R. B. Freight Lines, Inc., Aberdeen, S. D.
Rebel Air Freight, Inc., Mobile, Ala.
Ringsby Truck Lines, Inc., Denver.
Rio Grande Motor Ways, Inc., Denver.
Roscoe Turner Aeronautical Corp., Indianapolis, Ind.
Ryan School of Aeronautics, San Diego, Calif.

S

Sage-Allen & Company, Inc., Hartford, Conn.
Salt Lake Transit, Inc., Salt Lake City.

SAE Holds Aircraft Symposium— William Littlewood of American Airlines, standing, was chairman of the symposium on flight operational problems and characteristics of transport planes at the Society of Automotive Engineers' national aeronautic meeting in Los Angeles in October. Taking part in the discussion of new methods and developments to reduce operating costs as well as improve performance of large planes in long-haul transportation were: left to right, R. C. Loomis of TWA, Ralph S. Johnson of United Air Lines, Littlewood, H. J. Chase of Pan American Airways, and M. G. 'Dan' Beard of American Airlines.



At the drop of the Last Enemy Plane ....

READY TO SERVE POST-WAR NEEDS

Throughout the entirety of Uncle Sam's war effort, Aircraft Mechanics, Inc. has produced high tensile steel forgings and welded tubular assemblies for aircraft. At the drop of the last enemy plane, we will be ready to serve the post war needs of many peace time manufacturers.

To produce for war, we have developed a cooperative organization of highly skilled engineers, technicians, and craftsmen, who produce precision goods on the schedules established for them by our customers. We now are serving more than fifty of the major aircraft manufacturers.

Our activities are sufficiently varied so that we can easily adapt our facilities to any metal manufacturing project.

Write us, today, and tell us how we can serve you too. We know that you will be pleased with our ability to produce goods as specified, and at the time you specify.

BUY UNITED STATES WAR BONDS AND STAMPS

★ **AIRCRAFT MECHANICS** INC.

COLORADO SPRINGS, COLORADO

▲▲▲ DESIGNERS ▲▲▲ ENGINEERS ▲▲▲ MANUFACTURERS ▲▲▲

Schoenberg, Schoenberg and Schoenberg, East Providence, R. I.
Schreiber Trucking Co., Pittsburgh, Pa.
Schwarck, Leon W., San Antonio, Tex.
Seaboard Air Transport, Inc., Lumberton, N. C.
Seas Shipping Company, Inc., New York.
Service Stages, Inc., Atlanta, Ga.
"Shannon's", Fort Worth, Tex.
Shawmut Air Freight and Transport Co., Boston.
Shefferly, Mrs. Winnifred Lucy, Detroit.
Skyway Corporation, Providence, R. I.
Skyway Transportation, Inc., Paterson, N. J.
Southair, Inc., Memphis, Tenn.
South Central Air Transport, Inc., Fayetteville, Ark.
South East Airlines, Spartanburg, S. C.
Southeast Airlines Feeder Service, Inc., Lakeland, Fla.
South Suburban Safeway Lines, Inc., Harvey, Ill.
Southeastern Air Express, Inc., Atlanta, Ga.
Southeastern Greyhound Lines, Lexington, Ky.
Southern Airways, Inc., Birmingham, Ala.
Southern Aviation Corp., Nashville, Tenn.
Southwest Airlines, Roswell, N. M.
Southwest Airways, Co., Beverly Hills, Calif.
Southwest Feeder Airlines, New York.
Southwestern Air Lines, Inc., Houston, Tex.
Southwestern Freight Lines, Phoenix, Ariz.
Spartan Airlines, Inc., Tulsa, Okla.
Springfield Feeder Lines, Inc., Springfield, Mass.
Springfield Flying Service, Inc., Springfield, Mo.
Stamper, Arlie R., Saratoga Springs, N. Y.
State Airlines, Inc., Charlotte, N. C.
Stuart, B. M. & Sons, Russellville, Ky.
Summit Airways, Inc., Laramie, Wyo.
Sunshine Airlines, Amarillo, Tex.

T

Texas Airlines, College Station, Tex.
Texas Bus Lines, Houston, Tex.
Texas Central Airways, Inc., Dallas, Tex.
Texas-New Mexico Air Lines, Amarillo, Tex.
Thalhimer Brothers, Inc., Richmond, Va.
Thomas Air Service, Farmington, N. M.
Trailways of New England, Inc., Springfield, Mass.
Transamerican Freight Lines, Inc., Detroit.
* Transcontinental & Western Air, Inc., Kansas City, Mo.
Trans-Oceanic Air Lines, Inc., Wilmington, Del.
Tri-State Aviation Corp., Sharonville, O.
Tri-State Transit Co. of Louisiana, Inc., Shreveport, La.

U

U. N. Airships, Inc., Washington, D. C.
U. S. Midnight Sun Air Line, Inc., Whitehouse, N. J.
Union Air Lines, Washington, D. C.
Union Airways, Inc., Hagerstown, Md.
Union Bus Lines, San Antonio, Tex.
* United Air Lines, Inc., Chicago.
United Fruit Co., Boston.
United Transports, Inc., Oklahoma City, Okla.
Universal Air Freight Corp., New York.
* Uraba, Medellin & Central Airways, Inc., New York.

V

Van Dyke Airport Service, Inc., Buffalo, N. Y.
Vanmeter, Streeter & Co., Fergus Falls, Minn.
Van Son, John C., Kenmore, N. Y.
Van Zante, Keith B., Kansas City, Mo.
Vlair, Seattle, Washington
Vineland Flying Service, Inc., Vineland, N. J.
Virginia Central Airlines, Lynchburg, Va.

W

Walters Air Lines, Inc., Long Island City, N. Y.
Washington Motor Coach Company, Inc., Seattle, Wash.
Waterman Steamship Corp., Mobile, Ala.
Watkins and Rutledge, El Paso, Tex.
West Central Airlines, Inc., Houston, Tex.
West Coast Airlines, Inc., Seattle, Wash.
* Western Air Lines, Inc., Los Angeles, Calif.
Western Washington Airways, Alamogordo, N. M.
Western Washington Air Lines, Tacoma, Wash.
White Circle Line, Inc., Thompsonville, Conn.
Wichita Falls Air Transport Corp., Wichita Falls, Tex.
E. W. Wiggins Airways, Inc., Providence, R. I.
Willey Co., F. S., Inc., Laconia, N. H.
Willis Day Storage Co., Toledo, O.
Wilson, Ray, Inc., Chickasha, Okla.
Wisconsin Central Airlines, Clintonville, Wis.
Worcester Yellow Cab Company, Inc., Worcester, Mass.

Y

Yellow Cab Company of Cleveland, Inc., Cleveland, O.
Yellow Cab Company of Philadelphia, Philadelphia, Pa.
Yellow and Checker Cab Co., San Francisco, Calif.

Z

Zimmerly, Albert L., Lewiston, Idaho
Zenith Airlines Co., Glendale, Calif.

List of holders of foreign air carrier permits issued by the Civil Aeronautics Board, (indicated by *) and of applicants for such permits:

Aero-Transportes, S. A., Balderas 44, Mexico, D. F., Mexico
* British Overseas Airways, Corp., New York
* Compania Mexican de Aviacion, S. A., Bolivar 21, Mexico, D. F.
* Expreso Aereo Inter Americano, S. A., Horton Bldg., Havana, Cuba
Lineas Aereas Mexicanas, S. A., Reforma 1, Edificio Internacional, Mexico, D. F.
Panair do Brasil, S. A., Santos Dumont Airport, Rio de Janeiro, Brazil, S. A.
* Royal Dutch Air Lines (KLM), New York
Royal Dutch Air Lines, (KLM), and Royal Netherlands Indies' Airways (KNILM), New York
* Trans-Canada Air Lines, Montreal, Quebec, Canada
* Transportes Aereos Centro-Americanos, S. A., New York
Vancouver Island Air Lines, Ltd., Broad St., Victoria, B. C., Canada

List of holders of certificates of public convenience and necessity (indicated by *) and applicants for certificates involving service wholly within Alaska:

* Alaska Coastal Airlines, Juneau, Alaska
* Alaska Airlines, Inc., Anchorage, Alaska
Al Jones Airways, Anchorage, Alaska
* Bristol Bay Air Service, Anchorage, Alaska
* Christensen Air Service, Cantwell, Alaska
* Cordova Air Service, Inc., Cordova, Alaska
* Dillingham Air Service, Dillingham, Alaska
* Ellis Air Transport Corporation, Ketchikan, Alaska
* Ferguson Airways, Inc., Kotzebue, Alaska
* Harold Gillam, Fairbanks, Alaska
* Jim Dodson Air Service, Fairbanks, Alaska
* Ketchikan Air Service, Ketchikan, Alaska
* Kodiak Airways, Anchorage, Alaska
* Lon Brennan Air Service, Fairbanks, Alaska
* Munz Air Service, Nome, Alaska.
* Nat Browne Flying Service, Bethel, Alaska
* Northern Cross, Inc., Deering, Alaska
* Pan American Airways, Inc., New York
* Peck and Rice Airways, Anchorage, Alaska
* Petersburg Air Service, Petersburg, Alaska
* Ray Petersen Flying Service, Anchorage, Alaska
Walatka Air Service, Dillingham, Alaska
* Woodley Airways, Anchorage, Alaska
* Wien Alaska Airlines, Inc., Fairbanks, Alaska

CAB Vice Chairman Sees:

Postwar Traffic Newly Created, Not Diverted from Surface Lines

250 Passengers Will Fly North Atlantic Daily, He Predicts

EDWARD WARNER, vice chairman of the CAB, predicted in an address before the American Merchant Marine Conference in New York last fortnight that traffic generated by air transportation in the postwar period would not be diversion from existing surface carriers, but would be newly created and tending to increase with the length of journey.

In a revision of some of his earlier predictions, Warner foresaw year-around travel across the North Atlantic averaging 250 passengers daily in each direction. Other of his predictions were some 60 to 80 passengers daily to South America, below the north coast; to Australia, from 20 to 30; to Hawaii, about 60 to 80, and to Africa below the north coast, about 15 or 20.

"Some of these figures are a little lower than similar ones that I have previously published," Warner declared, "but I have become convinced by continued study of the subject that my earlier estimates were a little over optimistic."

Warner asserted that the most "far reaching influence on the distribution of travel among competing forms and classes of transport is undoubtedly that of rates of fare," adding that he expected the airplane to produce "a very considerable traffic which will not be diverted from existing carriers but newly created."

"As of five years hence, I expect the proportion of newly created business in the transcontinental travel by air to be at least a third; for transatlantic travel as much as 50%; for travel to Brazil and the Argentine, 60% or more; and for the transpacific trip as much as 75%."

The CAB vice chairman asserted that it was reasonable "to hope that domestic (airline) rates can be reduced by a third as a result of improvement in equipment and improved operating economy within a few years after the war," but said he expected transatlantic fares to stand at 5c a mile with intermediate stops, and seven or eight cents for non-stop operations. Rates in the Pacific area may be about the same or a little lower than on the Atlantic, he said, with those to South America and the Caribbean to be "appreciably lower."

Foresees 15c Per Ton Mile

With respect to air cargo, Warner predicted a total volume movement of some 3,000 tons annually between the U. S. and the Caribbean and Central American points; 2,000 tons to Brazil and the Argentine; 10,000 tons to northern Europe, 5,000 tons to the Mediterranean area, 1,000 tons to Africa south of the north coast, 1,500 tons to Australia and 4,000 tons to the Far East.

A 15-cent per ton mile rate does not "seem beyond reasonable hope" for cargo moving to South America, he said.

BEECHCRAFTS SERVED 26 NATIONS
BEFORE THE WAR

(Top) One of Starratt Airways' Beechcrafts used on skis and floats in passenger, mail and express service in the Canadian Northwest

(Photograph courtesy Starratt Airways, Ltd.)

(Center) Most Army Air Forces navigators were trained in Beechcraft AT-7 navigation trainers, like these three flying in echelon formation

(Official Photograph U.S. Army Air Forces)

AND WHEN PEACE COMES

Beechcrafts will be ready. Ready to serve the nations of the postwar world with aircraft refined and proven by millions of miles of accelerated wartime service. Ready with designs ideally suited for feeder airline use, for executive transport, for business and charter purposes, and for exhilarating, swift, safe personal transportation.

After the final V-Day, Beechcrafts will *continue* to do their part.

Beech Aircraft
CORPORATION

BEECHCRAFTS ARE DOING THEIR PART

WICHITA, KANSAS, U.S.A.

Schaum

Oechsner

Franco

Ireland

Traffic

D. C. Vaile, manager of the industrial department of the Seattle Chamber of Commerce for 20 years, has been appointed assistant to the Western traffic manager of Northwest Airlines.

Capt. Gordon C. Shook, recently returned from overseas service and now retired from the Army, has resumed his pre-war position as DTM for Braniff Airways in San Antonio.

W. R. Thigpen, DTM for United Air Lines at Portland, Ore., since 1941, has been promoted to DTM in New York City. **Paul Oechsner,** formerly with United's air cargo department in Los Angeles, has been named air cargo area manager for Portland. **Larry Kent,** former West Coast orchestra leader, has joined the traffic department of United in Los Angeles.

Maj. George Cussen, air traffic manager for TWA in Los Angeles prior to the war and now serving as chief of operations for the Air Service Command's transport wing, has been promoted to Lieutenant Colonel.

Joseph D. Boylan has assumed his new duties as regional cargo traffic manager for American Airlines.

Edward O. Ireland, formerly New York mail and express traffic representative for TWA, has been named assistant director of cargo sales for the TWA system with headquarters in Kansas City.

E. G. Madsen, assistant station manager for PCA at Detroit, has been named station manager. **W. D. Campbell,** passenger relations manager in Pittsburgh, takes Madsen's former job. **C. A. Miller,** station manager at Lansing, Mich., has been named station manager at Grand Rapids. **Jack Ruhl,** former Michigan State football player, has joined the traffic staff of PCA in Detroit.

Robert O. Bullwinkel has assumed his new duties as assistant to the president of Northwest Airlines..

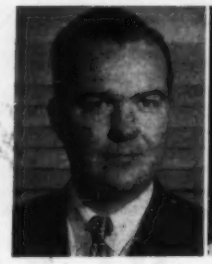
Airline Personnel

Thigpen

Marshall

Bullwinkel

De Long



Boylan

Ruhl

Cussen

Kent

Operations

Capt. Oliver J. Studeman has been appointed operations manager of the Pacific-Alaska Division of Pan American Airways. He replaces **Capt. J. H. Tilton,** who is to receive a new assignment.

Frances Crawford, senior hostess at PCA's Washington base, has been promoted to assistant chief hostess and has been assigned to the Detroit base.

John Hoover Schaum, PCA's foreman of line maintenance in Detroit, recently

Cook

Vaile

Archbold

Wolfle

was flown to the airline's general offices in Washington, D. C., for a ceremony marking his completion of 10 years' service.

Capt. Merrel Brock of Braniff Airways celebrated his 25th anniversary as a pilot Oct. 10. In 25 years he has logged approximately 14,000 hours flying time.

C. Wesley Archbold has been named director of food service for Northwest Airlines. For the last two years he has been supervisor of the preparation of flight meals for U. S. Army air crews in three war areas. **Col. W. Fiske Marshall,** former operations manager of Northwest who has been on duty in the Pacific, has returned to the airline as executive assistant to the president.

Miscellaneous

Dewey C. Wayne has resigned as chief of the transportation branch of OPA's transportation and public utilities division to become general manager of Aero-Transporters, Inc., S. A., Monterrey, Mexico.

Jay M. Jackson has been appointed assistant to the general counsel of Braniff Airways with headquarters in Dallas. **Al Wolfle** has been named employment manager of the airline. He was formerly DTM in Oklahoma City.

Ernesto Franco, formerly legal and administrative assistant to the vice president of Panagra, has been named legal advisor for the 12 TACA companies in Latin America.

Advertising

John Maitland Cook, former advertising manager for the Davidson-Boutelle Stores, has been named advertising manager of Northwest Airlines.

James C. DeLong, at one time aviation editor of the Financial World, New York, has been named director of advertising for TWA. He was recently advertising director of General Cable Corp.

Parts For Sale

Large stock of miscellaneous parts for aircraft and engines—NEW AND USED

WACO UPF-7 PARTS... A large stock at attractive prices.

PARACHUTES . . . $50 and up. Pioneer—Switlik—Irving Seat packs and back packs are both included. Will be sold repacked and ready for use.

ENGINES

5 Continental W 670—6A
1 Continental A 75—9
1 Ranger 6—440—C 3
1 Lycoming R 680—B 6
1 Lycoming O—145—B 1
1 Lycoming 215 H P
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Air Commuting Operation Specified In Application Filed With CAB

NON-CERTIFICATED applicants proposing a variety of feeder services, including an air commuting operation, dominated a steady stream of applications which continued to reach the CAB's Docket Section during the past fortnight.

The commuter application, filed by Air Commuting, Inc., proposed service from New York to suburban areas to fill the need for traveling speed to and from downtown offices. Both conventional and unconventional aircraft were proposed.

Northwest Airlines filed amendments to a previous application seeking to extend its proposed services in the Pacific eastward to include Minneapolis-St. Paul, Detroit, Washington, Chicago and New York. NWA also proposes to extend its proposed international routes into the Orient and Siberia.

Following are the applications filed:

Alaska Airlines

This applicant has filed two applications seeking certificates to operate between Chicago and the co-terminals Fairbanks and Anchorage, Alaska, and between Seattle and Anchorage. In the Seattle-Anchorage application, Alaska asks for the intermediate points Juneau, Gustavus, Yakutat and Cordova. Intermediate points named in the Chicago-Alaska application are Minneapolis, Fargo, N. D., Regina, Edmonton, Fort St. John, Fort Nelson, Watson Lake and Whitehorse, Canada. Applicant states that it would be willing to accept a certificate restricting the transportation of persons, property and mail between points in the U. S., Canada and Alaska, since it is primarily interested in such transportation between the U. S. and Alaska. (Dockets 1643, 1644).

Northeast Air Lines

This applicant has filed for a certificate to transport persons, property and mail between Boston and Bermuda. In a statement released at the time the application was filed Paul F. Collins, Northeast president, said the application would eliminate the necessity of persons from the New England area having to go to New York to make the Bermuda trip. Mileage from Boston to Bermuda is the same as from New York, he said. Northeast's average flying time with four-engine equipment is stated to be three hours and 15 minutes at an approximate fare of $39.

Northwest Airlines

This applicant has filed amendments to two applications filed under Dockets 862 and 985 and consolidated for hearing in the Pacific cases (Docket 547 et al), asking routes from New York to Minneapolis-St. Paul, via Detroit; New York-Seattle, via Detroit and Minneapolis-St. Paul; Washington-Chicago, via Minneapolis-St. Paul, and Washington-Seattle via the same intermediate points.

Applicant also seeks intermediate points in Alaska such as Anchorage, Kodiak, Dutch Harbor, the Aleutian Islands or Nome, and intermediate points in Japan and China such as Paramushiru, Tokyo, and beyond to Dairen, Manchuria and/or routes in the vicinity of Mukden, Tietsin or Peiping, China, to Shanghai and Canton; beyond Canton to Manila, Singapore, and Calcutta, and routes across Siberia from Alaska.

Transcontinental and Western Air

This applicant has filed an application with the CAB asking an amendment of its certificate on Route 35 to remove restrictions that service shall be provided to Los Angeles on this route only on flights originating or terminating at Albuquerque, N. M., or other points east of there.

Air Commuting, Inc.

This applicant of 25 Broadway, New York, N. Y., has applied to the CAB for three main routes radiating out of New York City "to fill the need for traveling speed to and from suburban homes" to downtown places of business. Routes sought are from Greenwich, Conn., to New York, via Norwalk, Conn., New Rochelle, Rye, Tarrytown, Tuxedo, White Plains and Yonkers, N. Y.; from Atlantic Beach to New York, via such intermediate points as Bayshore, Freeport, Glen Cove, Huntington, Port Washington, and Rockville Center, and from Asbury Park to New York via Englewood, Long Branch, Passaic, Paterson and Plainfield, N. J. Applicant proposes to use both conventional and "unconventional" types of aircraft, including single and multi-engine equipment. (Docket 1642).

Francis L. Duncan

This individual of 1625 K St., N. W., Washington, D. C., has applied to the CAB for a certificate of convenience and necessity for the transportation of persons, property and mail between Seattle, Wash., and Anchorage, Alaska, via Gustavus Airport and Annette Island, Alaska. The applicant proposes to use DC-3 equipment.

Ellis Air Transport

This applicant has filed an amendment to its application filed under Docket 912, withdrawing the Ketchikan-Edna Bay portions of the original application.

Arthur A. Fogarty

This applicant of 458 Bridge St., Springfield, Mass., has filed an application with the CAB asking irregular routes between such points as Albany, N. Y., New Haven, Conn., Portland, Me., and Springfield, "and other points and places" in Alabama, California, Florida, Georgia, Louisiana and Texas, utilizing various types of aircraft including helicopters. Applicant is at present engaged in the trucking business. (Docket 1638).

Fogarty also has filed an amendment to a previous application covering the same terminal points and areas, but asking for regularly scheduled routes. (Docket 1564).

Hannaford Air Lines

This applicant of Suite 535, 111 W. Washington St., Chicago, Ill., has filed an application with the CAB for the transportation of persons, property and mail between Dallas and San Antonio, Tex., via the intermediate points Ft. Worth, Temple and Austin, Tex. Applicant proposes to use either Beechcraft Model 18S or Lockheed 10As. (Docket 1647).

Wayne B. Lee

This individual of 611 S.W. 2nd St., Perryton, Tex., has applied to the CAB for a certificate for the transportation of persons, property and mail over three routes between the terminal points Perryton and Amarillo, via Sherman and Borger, Tex.; Perryton and Canadian, Tex., and Perryton and Liberal, Kans. Lee, a 2nd Lieutenant in the AAF, proposes to use AT-7s and UC-45s in the operation.

W. H. Lovett and William L. Hutcheson

This partnership of Kite, Ga., has filed an application with the CAB for scheduled air transportation of persons, property and mail, between Macon and Savannah, Ga., via the intermediate points Milledgeville, Dublin, Vidalia and Statesboro. Applicant proposes to employ conventional aircraft. (Docket 1639).

New England Airways, Inc.

This applicant of 58 Fairhaven Rd., Worcester, Mass., has filed an application with the CAB requesting a temporary or permanent certificate for the transportation of persons, property and mail and for aerial pickup services on five "short haul" routes out of Worcester. Terminal points in addition to Worcester include Portland, Me., Rochester, N. Y., Burlington, Vt., and New York. Applicant proposes to use twin-engine equipment. (Docket 1629).

Norseman Air Transport

This applicant of 78 Farmington Ave., Longmeadow, Mass., has filed four applications with the CAB for the transportation of persons, property and mail by both pickup and flag-stop services in the New England area.

Under Docket 1651, the applicant seeks routes from Hartford and New London, Conn., via Willimantic; under Docket 1652 between Burlington, Vt., to Rochester, N. Y., via Oswego, N. Y.; under Docket 1653 between Hartford, Conn., to Scranton-Wilkes-Barre-Williamsport, Pa., via Poughkeepsie, N. Y., and under Docket 1654 non-scheduled operations from Quebec to Moncton, N. B., via Presque Isle, and from Augusta, Me., to Quebec via Clayton Lake, Me.

Penn-Ohio Coach Lines Co.

Penn-Ohio Coach Lines Co., 25 E. Boardman St., Youngstown, O., has filed an application seeking six routes over which it proposes to operate a coordinated bus-helicopter service and a feeder line to other air carriers. Proposed routes run from Cleveland to Parkersburg, W. Va.; Cleveland to Wheeling, W. Va.; Cleveland to Pittsburgh; Youngstown to Wheeling; Wadsworth, O., to Sharon, Pa.; and Youngstown to Columbus.

Applicant states that it presently operates a bus service over these same routes, and that under its proposal it would operate direct helicopter service from its bus terminals at Canton, Akron, and Youngstown, O., and Sharon, Pa. One round trip a day is proposed to initiate the service. (Docket 1658).

South East Airlines, Inc.

This applicant of 115 South St., Gastonia, N. C., has filed an application with the CAB for the transportation of persons, property and mail, including pickup service, on a feeder system embracing 10 routes fanning out from Charlotte, N. C., to Norfolk, Va., and Beaufort, N. C., Regular mail, passenger and express service would be operated over six of the routes, and a mail pickup service over four of the routes.

The application states that among the company's stockholders are 12 licensed pilots and a flight dispatcher presently employed by Consolidated Vultee Aircraft Corp., and a Pan American Airways pilot. All would participate in the proposed operation. (Docket 1655).

John B. Sutton, Jr.

A 2nd Lieutenant in the AAF, Sutton has applied to the CAB for the transportation of persons, property and mail over three routes: (1) from Pittsburgh to Toledo, via such intermediate points as Canton, Findley and Mansfield, O.; (2) Pittsburgh to New York via Johnstown, Altoona and Wilkes-Barre, and Syracuse-Atlantic City, via Binghamton, N. Y. and Allentown, Pa.

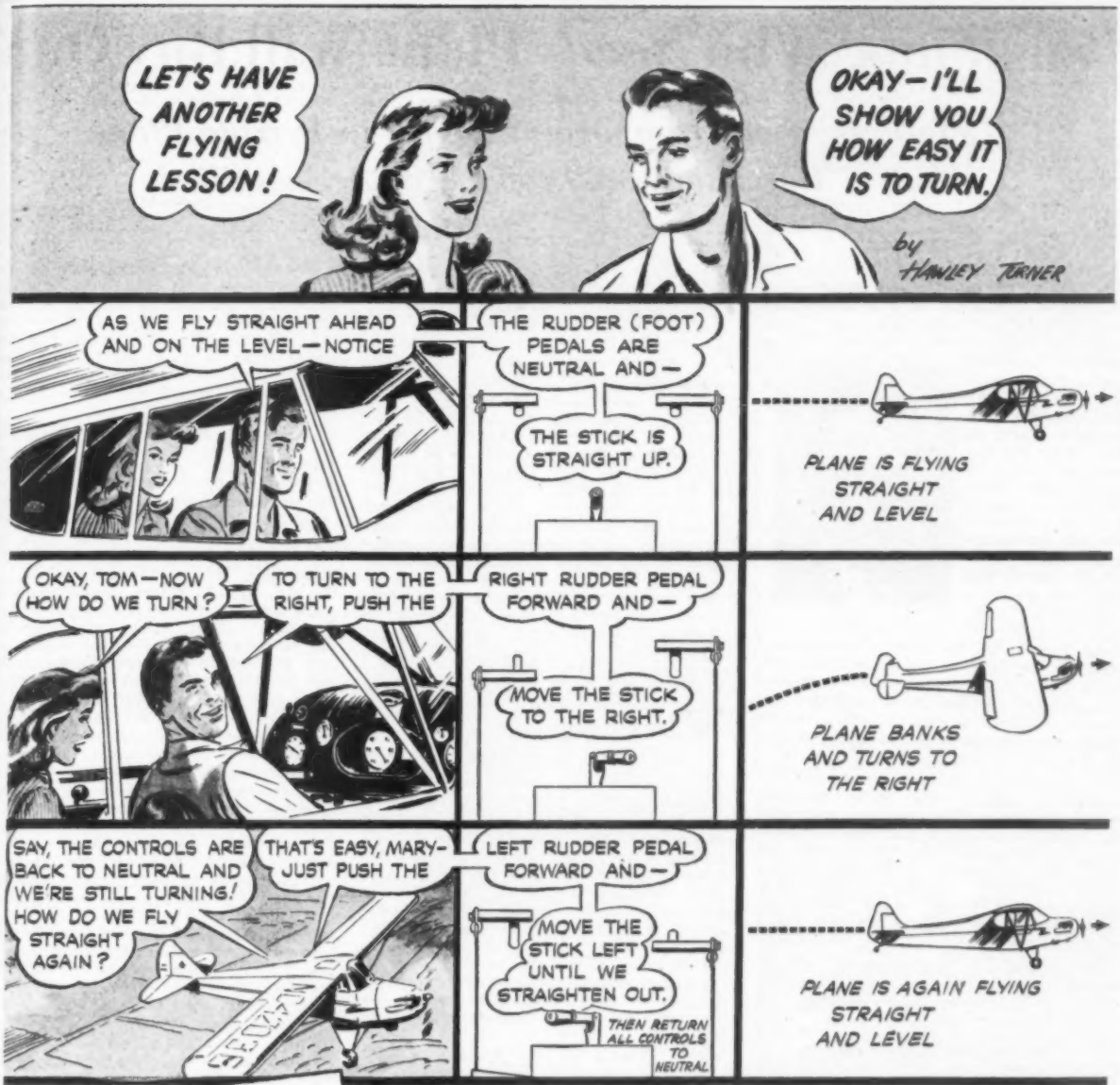
Sutton proposes to organize a Pennsylvania corporation, *Industrial Airlines*, to operate the routes with C-45 Beechcraft. Applicant's present address is c/o Robert M. Repp, Union Trust Co., Pittsburgh. (Docket 1656).

Thomas Air Service

This applicant of Farmington, N. M., has filed an amendment to its application filed under Docket 984, to include Gallup, N. M., and Green River, Utah, as intermediate stops on its proposed feeder line between Albuquerque and Salt Lake City.

Texas Motor Coaches, Inc.

This applicant of 1500 Sinclair Bldg., Fort Worth, Tex., has filed an application with the CAB requesting a certificate to operate a mail, baggage and express and a charter service by both conventional aircraft and helicopter between Fort Worth and Dallas via Arlington and Grand Prairie, Tex., and between Fort Worth and Dallas, via Midway Airport. The company is presently operating a bus service over approximately the same routes. (Docket 1649).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THE STICK IS STRAIGHT UP.
PLANE IS FLYING STRAIGHT AND LEVEL
OKAY, TOM—NOW HOW DO WE TURN?
TO TURN TO THE RIGHT, PUSH THE
RIGHT RUDDER PEDAL FORWARD AND—
MOVE THE STICK TO THE RIGHT.
PLANE BANKS AND TURNS TO THE RIGHT
SAY, THE CONTROLS ARE BACK TO NEUTRAL AND WE'RE STILL TURNING! HOW DO WE FLY STRAIGHT AGAIN?
THAT'S EASY, MARY—JUST PUSH THE
LEFT RUDDER PEDAL FORWARD AND—
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'Customer Who *Needs* Plane Will Buy One'

Usefulness Seen as Important Factor in Private Plane Sales, 'But There's a Problem in Accessibility'

By E. J. Foley

A PRIVATE AIRPLANE for every 300 people in the United States is an impressive expression of a recent expert prediction. Thirty-five years ago, there was only one automobile for every three hundred Americans but just prior to the war that figure had reached a low of one passenger car for every 4.8 people. Is there reason to believe that the personal aircraft industry will travel that same road in the next 50 years?

Foley

Probably not; the progress of these two media for private transportation will be only partially parallel. Yet, many aspects of the automobile history should be of interest to the aviation industry. Similarly, the specific factors which can preclude a parallel private plane growth must be taken into account.

In theory, the personal aircraft and the automobile serves the same purpose, namely individual or family transportation in the interests of business or pleasure. Just as the automobile extended the radius of travel over that of the horse and buggy, so the airplane takes us another long step toward the desirable goal of a nation of next door neighbors.

Two significant determinants of the future private airplane market are obviously cost (initial and recurring) and usefulness.

Initial Cost Unimportant

We believe that undue emphasis has been placed upon the importance of initial cost. Some would make it an immovable deterrent to mass private flying, instead of the temporary obstacle which it really is and which it has been in the early history of every product including the automobile. Again, such a foreboding assumption does not always recognize the relative nature of cost as reflected by the nation's prosperity or depression.

The figures most commonly quoted as a reasonable price range for the postwar private airplane are $1,500-$3,000. In 1925, the Automobile Manufacturers Association tells us, nearly 200,000 automobiles were sold in the *wholesale* price range of $1.500 to $3,000 and over in the U. S. and Canada. This represented about 5% of that year's sales and if we attempt to reduce these figures to retail price range, they doubtless double and represent 10% of the market. The further back one goes, the greater the percentage of the market made up by the high cost units.

Usefulness has unquestionably been a more important factor in the automobile's growth than cost. The same must be expected to hold true for the private airplane and here we have a real problem. Your car is at your doorstep; it is useful 100% of the time generally speaking. It is the *accessibility* and the resultant utility which has provided one automobile for every five people.

What can be said for the private airplane's future in this respect? For a long time to come, there will be no backyard and front door airplane. The useful factor, therefore, hinges on our ability to provide practically neighborhood accommodations for the private flyer. The recent public comment of representatives of the larger municipalities indicates that this will be difficult in many cases and impossible in some others. This factor will be the most oppressive to private aviation: too far to go to get started *flying*. The need for an integrated national plan is apparent and the active attack upon this problem by all elements of the aviation industry is already being planned.

Let's Be Realistic

Recurring cost or upkeep is materially affected by this problem of inaccessibility. Transportation to and from the operating site must be included in recurring costs if we are to be realistic. Also, there is the problem of hangar space, charges for which have hardly been in line with garage rents. An essential to general acceptance of the private airplane will be a low cost or low rent-hangar. It is to be hoped that those companies which have already expressed an interest in solving this problem do not lose sight of the singular importance of cost.

Getting back to the automobile parallels, we are struck by the significance of parts and accessory sales and maintenance or repairs. The National Automobile Chamber of Commerce reports that in 1929 10.5c of the retail automotive dollar went for repairs and storage and 9.11c for parts and accessory purchases. Twenty per cent of the industry's dollar volume was bracketed by these two services. Gasoline for this same year comprised another 16.65c of the dollar.

To our knowledge, the nation's plans for private flying have ignored these services—their how's and where's—in deference to the presumably more important matters of the aircraft itself and airports. This cannot long continue for their significance to the "consumer" must be expected to be at least as great as in the automobile field.

Distribution of parts and availability of qualified service are nationwide problems of the private plane makers. They have before them the precedent of the car makers in the matter of "authorized service stations" and the problem is not so much one of "how to do the job" but rather of establishing an adequate national pattern of affiliations to provide uniformity and satisfaction of all interested agencies.

As mentioned earlier, marked discrepancies must be expected between automobile and private airplane progress. However, the 1941 Automobile Facts and Figures, a handbook of the industry put out by the Automobile Manufacturers Association has too many interesting and potentially pertinent points to be overlooked by anyone with his eye on the private flying field.

For instance, the predominent appeal of the 2-door and 4-door sedan have permitted these two body types to appear on more than 75% of the automobiles sold in the United States and Canada for many years. However, the coupe is on the march and in 1940 it absorbed 16 of the remaining 20-25% of the sales. Just how this public taste for surface vehicles will be reflected in aircraft sales remains to be seen, of course, but wisdom in aviation market research should take into account past public preferences at least to the extent of inquiring as to their appropriateness to the new "air car."

Thirty-eight per cent of all our automobiles are registered on farms and towns of under 2,500 population. This is not surprising upon consideration of the significance of distances and distance-cutting means to such areas. This is a yardstick that the personal plane builders can't afford to miss. "Flying farmers" is something more than an alliterative catch phrase; it is a fertile field for plane sales and its cultivation should be kept high on the list of postwar potentials. Look at Oklahoma for example. Just a fortnite ago, some twenty or more "flying farmers" converged on Oklahoma City for an agricultural meeting and it is estimated that there are that many more in the state operating their own craft.

76,000 Car Owners Asked

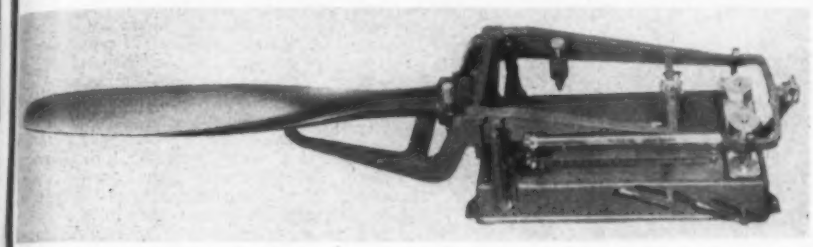
The day-by-day use of the private automobile prior to 1939 is reflected in the results of a questionnaire survey of 76,000 car owners in six representative states. The percentage of necessity trips as contrasted with social or recreational trips decreases as the size of the city increases. In farms and unincorporated areas 64% of the trips were of a necessity nature while in cities of 100,000 and over, this figure had dropped to 49%. This is logical and in line with our earlier comment on the farm market for private aircraft. The customer who *needs* the product is the one who will buy it. Then, too, one must recognize that the farmer does not have the municipal airport problem to contend with. Where he wants his field, he usually has it.

These have been just a few observations on private flying prospects and the possible parallels to automobile history. We have made only *observations* and will welcome differences with our viewpoint.

Equipment News

Propeller Balancer

One of the latest products built by Howe Scale Co. for the use of the aviation industry is a scale for the static balancing of airplane



propeller blades to precision limits. With this scale, all blades can be brought to a standard balance, thus facilitating the assembly of new propellers and making it possible to replace broken blades immediately at field bases. Such precision balance is obtained by inserting the butt end of a blade into a clamping socket on the scale until it touches two contact stops which are set the same distance from the fulcrum pivot as the butt would be from the center of the hub of the propeller shaft. Two lamps light up to indicate when the butt end is located properly. A lever and lifting arrangement eliminates manual handling of weights, a graduated indicator permits extremely accurate readings a special mechanism locks the lever in position when not being used, and a relieving device raises the fulcrum knife-edges off the bearings for protection when blades are being mounted or removed. Six counterpoise weights make it possible to balance various-sized blades on the same scale.

Pneumatic Lifting Bag

Air Technical Service Command announces the addition to standard AAF equipment of a pneumatic lifting bag for jacking up aircraft on soft ground and for use in raising crashed planes. The idea came originally from the enemy, when the British captured some pictures of giant rubber bags being used as airplane jacks. The British were quick to pick up the idea and to pass it along to the AAF. The Air Technical Service Command's equipment laboratory added some American ingenuity in the form of a device for lacing the bags together so that high-wing planes might be lifted to any desired height. The equipment weighs 220 pounds and can be carried in most planes. It is furnished in sets consisting of three bags and one gasoline-engine-driven blower. Each bag is six feet high. Only two are required to lift most planes, but a B-24 Liberator takes four and a B-29 Superfortress, eight. Each bag can support 12 tons, measures approximately six and a half feet square and is filled with air at a pressure of three pounds per square inch. This pressure does not exceed the skin strength of an airplane wing, thereby preventing any wing damage during lifting. ATSC engineers report it is far simpler to slip the deflated bags under the wings of a belly-landed plane and inflate them, than to use the old method of excavating and inserting hydraulic jacks.

Ignition Harness Tester

This instrument, developed by J. E. Cregier, 1040 Milan Ave., Coral Gables, Fla., is used for testing ignition harness in the field by employing the current from the plane's storage battery. From this source of supply the instrument delivers up to 10,000 volts. It also carries three flashlight batteries, which are used in synchronization of magnetos, and also can be used in testing out circuits. The gross weight is four lbs., so that it can readily be carried in a plane and used anywhere in the field where trouble occurs.

Instrument Flying and RADIO NAVIGATION

by HOLLAND L. REDFIELD

Airline Instrument Flight Instructor

New! Simple, direct guidance for handling *fast, modern aircraft*. Builds on what you already know about contact flying—there's no need to *unlearn* good flying habits. The methods are the same as those the author uses to train both new pilots with no instrument experience to seasoned captains who must keep their knowledge up to date.

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Buyer May Bid or Ask U. S. To Set Price of War Plant

Piece-meal Disposal Possible But Sale in Unit Lots Preferred

By GERARD B. DOBBEN

METHODS OF PROCEDURE by which the Government hopes to dispose of eight million dollars worth of surplus war plants, three billion dollars worth of which is represented by aviation manufacturing facilities, have been outlined by the War Surplus Property Division of the Reconstruction Finance Corporation.

There is no set formula which will govern the sale of surplus plants beyond the terms prescribed in the option agreements which are held by most of the lessees. The procedure to be followed, at least until the three-man board is appointed by the President under terms of the War Surplus Property Act, is relatively simple and free from red tape. Sale agreements will be made subject to the contingencies of present contracts and the length of time plants will continue in war use.

RFC officials advise that the prospective buyer should go to the nearest office of the RFC, indicate his interest in entering negotiations for purchase of a particular plant, make a definite proposition if he is so inclined or ask the Government to set a price. If the latter course is followed, RFC engineers will appraise the value of the property on a present day replacement basis, less such overtime and double time labor costs which may have figured in the original cost. Also eliminated from the Government price will be all costs which may have resulted from delays in obtaining material. Depreciation on plants will be figured at 5% per year. The interest rate on purchase contracts will be 4%.

Wherever possible, the Government will sell the machinery and fixtures in the plant as an entire unit. Where they are sold separately, equipment, machinery and furniture will be disposed of at cost, less depreciation at 12 percent a year. Portable equipment, durable tools, automotive equipment will be sold at cost price, less 25 percent a year depreciation but in no event, at a price which will be lower than 15 percent of the original cost.

RFC officials revealed that in most cases, the operator of the plant has an option to buy on the basis of the terms described above. However, there is no reason why the lessee cannot cancel his option to buy and make an outright bid if he desires to do so. Whether the Government decides to sell will be based on prospects whether the plant can be sold for a higher price, or whether there is any likely market for the plant through other sources.

Under option agreements, the lessee has 90 days to purchase the plant from the time that the lease is terminated or expires. If the option is not exercised within the 90-day period, the lessee retains a right of refusal to meet the terms of a bid or bids which may have been received although the Government is not obligated to sell to the lessee under the terms of the second 90-day clause.

No set percentages have been fixed as to the down payment or the period that the puchase contract may run. Circumstances will determine the terms in each case. The prospective buyers credit standing and financial status will be important factors in the determination of the terms, and good business practice will be followed to the extent possible.

RFC officials gave the impression that the Government would dicker for the best deal possible. RFC district managers do not have authority to close the deal. Final approval must be obtained from the Washington office.

Preliminary surveys have indicated that a relatively larger number of lessees may be expected to exercise options to purchase buildings erected in 1941 than those who lease buildings erected in 1942 and later. Buildings erected in 1942 and since that date have cost from 5 to 18 percent more than those erected in 1941 where there were no manpower and material shortages, the RFC officials point out.

With respect to airports or aviation schools and their facilities, the Government prefers to sell them intact if possible. It does not desire to sell a hangar or barracks for removal from the property if such action will affect the prospects of selling the property as a whole. But the officials said RFC would entertain any reasonable offers for disposal.

DPC Aviation Holdings Up for Disposal

AVIATION HOLDINGS to be disposed of by Defense Plant Corp. are shown herewith, broken down by states, together with listing of DPC regional offices where further information is available.

Alabama

Southern Airways, Inc., Decatur: 33-acre building site; main flying field 597 acres; 5 auxiliary fields, 734 acres; 16 buildings, 232,000 sq. ft. DPC, Birmingham.

Arizona

Airesearch Manufacturing Co. of Arizona, Inc., Phoenix: 8.5 acres; 10 buildings; 580 pieces of machinery, 625 portable tools, 725 gauges, etc. DPC, Los Angeles.

Claiborne Flight Academy, Wickenburg: 60 acres owned in fee; 1,360 acres under lease; auxiliary field 640 acres leased. 23 buildings, 87,681 sq. ft. Kitchen equipment. DPC, Los Angeles.

Goodyear Aircraft Corp., Litchfield Park: 299,263 acres; 9 buildings. Fully equipped for airplane parts production. DPC, Los Angeles.

Ryan School of Aeronautics of Arizona, Tucson: Main field 160 acres; 4 auxiliary fields 800 acres. 16 buildings, total sq. ft. 188,940 feet. Kitchen and canteen equipment. DPC, Los Angeles.

Southwest Airways Inc., Thunderbird I, Glendale: 660 acres main field, 3 auxiliary fields under lease. 20 buildings, total 167,700 sq. ft. Kitchen equipment. DPC, Los Angeles.

Southwest Airways Co., Mesa: 760 acres (40 under condemnation), 603.96 acres leased. 17 buildings, total sq. ft. 115,411. Kitchen and canteen equipment. DPC, Los Angeles.

Thunderbird II, Phoenix: 720 acres, three auxiliary fields. 21 buildings, total floor area 144,669 sq. ft. Kitchen and canteen equipment, water supply and electricity. DPC, Los Angeles.

Arkansas

Helena Aero Tech., West Helena: 640 acres. 28 buildings, aggregate of 181,072 sq. ft. Well, pumps, motors, etc., air-conditioning units, oil equipment.

Pine Bluff School of Aviation, Pine Bluff: 21.17 acres leased adjoining 775 acres of landing area, privileges granted without charge, 318.18 leased about 3 miles west of Grady; 40 buildings 238,113 sq. ft.; kitchen, field and utilities equipment. DPC, Little Rock.

Wiggins-Marden Aero Corp., Camden: 50.75 DPC-owned acres, 542.49 acres leased; 21 buildings with total floor area of 128,445 sq. ft.; air-conditioning and kitchen equipment, miscellaneous. DPC, Little Rock.

California

Aerojet Engineering Corp., Azusa: 47.35 acres; 25 buildings, 22,692 sq. ft.; 141 pieces of production equipment. DPC, Los Angeles.

Cal Aero Academy, Ontario; 375 acres, 4 auxiliary fields; 24 buildings, 125,303 sq. ft. (4 hangars, 116,472 sq. ft.); kitchen and canteen equipment. DPC, Los Angeles.

Consolidated Vultee Aircraft Corp., San Diego: 59.1 acres in fee; 33.7 acres, leased; 27 buildings, 1,863,267 sq. ft.; 1965 pieces machinery, 28,470 portable tools, kitchen and cafeteria equipment complete. DPC, Los Angeles.

Douglas Aircraft Co., Inc., Santa Monica: 14.72 acres; 7 buildings, 336,040 sq. ft.; 8,248 pieces machinery and equipment. DPC, Los Angeles.

Douglas Aircraft Co., Inc., Santa Monica: 113.44 acres; office building and garage, 800,000 sq. ft.; 21,362 pieces machinery and equipment; tools and furniture. DPC, Los Angeles.

Douglas Aircraft Co., Inc., Los Angeles: 21.8 acres; engineering building and cafeteria, 105,680 sq. ft.; fire-protection devices, furniture; cafeteria pieces. DPC, Los Angeles.

Douglas Aircraft Co., Inc., Santa Monica: 13.83 acres; 6 buildings, 113,476 sq. ft.; 187 shop machinery pieces, 198 lab equipment pieces, office and cafeteria equipment. DPC, Los Angeles.

Eagle Field (Coast Aviation Corp.), Dos Palos: 640 acres; 45 buildings, 162,056 sq. ft.; kitchen equipment. DPC, San Francisco.

Kaiser-Hughes, Culver City: 15.56 acres; cargo plane assembly building, 212,700 sq. ft.; 23,617 miscellaneous pieces machinery and equipment. DPC, Los Angeles.

Lockheed Aircraft Corp., (Vega Plant), Burbank: 36.34 acres; 6 buildings, 778,768 sq. ft.; about 8,000 miscellaneous pieces machinery and equipment. DPC, Los Angeles.

Lockheed Aircraft Corp., Burbank: 3 parcels of land, 34.068 acres; 4 buildings, 286,100 sq. ft.; warehouse equipment, trucks, tractors, etc. and machinery. DPC, Los Angeles.

Menasco Manufacturing Co., Burbank: 8.04 acres; 5 buildings, 101,800 sq. ft.; machinery suitable for light or medium manufacturing. DPC, Los Angeles.

Mira Loma Flight Academy, Oxnard: 143 acres, 4 auxiliary fields; 48 buildings, 130,811 sq. ft.; 31 pieces for kitchen and canteen. DPC, Los Angeles.

Morton Air Academy, Blythe: 710 acres; 31 buildings, 2 hangars, 171,115 sq. ft.; kitchen and canteen equipment. DPC, Los Angeles.

North American Aviation, Inc., Inglewood: 10.0256 acres; 8 buildings and loading dock, 991,910 sq. ft.; 834 pieces equipment. DPC, Los Angeles.

Standard on the "Route of the Flagships"

IN 1939, American Airlines adopted the Collins 17F Autotune* aircraft transmitter as standard equipment for its entire fleet.

Previous experience on a lesser scale had indicated the wisdom of this step. Succeeding experience has confirmed it.

Compared with previous equipment, the 17F's doubled the power output (to 100 watts) with slight increase in weight, and the Autotune* provided thirteen quickly available operating frequencies instead of three.

Daily through the years, these rugged, uniquely efficient airborne 17F's and powerful Collins ground transmitters have given trustworthy support to a superb Operating Department in maintaining the great American Airlines tradition of safety and dependability.

After the war, Collins will again specialize in the development and production of advanced types of communication equipment for commercial aviation.

Its designs will bear the fruit of intense research and outstanding engineering achievement now engaged in meeting the hard demands of military service all over the world. Collins Radio Company, Cedar Rapids, Ia.

*The Collins Autotune is a repositioning mechanism which quick-shifts all transmitter or receiver controls simultaneously and with extreme precision to any one of a number of pre-determined frequencies. U. S. Patents issued and pending.

COLLINS

Northrop Aircraft Inc., Hawthorne: 43.443 acres and 6.408 acres; 6 buildings, 354,720 sq. ft.; tool machinery, office equipment, drafting room accessories, cafeteria equipment. DPC, Los Angeles.

Pacific Aviation, Inc., Mines Field: 14.864 acres; 5 buildings, 37,340 sq. ft.; 555 pieces machinery and equipment. DPS, Los Angeles.

Palo Alto Airport, Inc., King City: 0.6925 acres (DPC) and 249.19 acres leased; 24 buildings, 176,434 sq. ft.; kitchen and cafeteria equipment. DPC, San Francisco.

Polaris Flight Academy, Lancaster: 1,562.7 acres; 46 buildings, 185,940 sq. ft.; 34 kitchen and canteen pieces. DPC, Los Angeles.

Rankin Aeronautical Academy, Tulare: 800 acres; 23 buildings, 170,691 sq. ft.; heating, lighting, etc., facilities. DPC, San Francisco.

Rohr Aircraft Corp., Chula Vista: 31.99 acres; 9 buildings, 392,504.87 sq. ft.; overpass; 312 pieces machinery; 2,635 pieces portable tools and automotive equipment. DPC, Los Angeles.

Ryan School of Aeronautics, Hemet: 344.64 acres, also 638.5 acres leased land; 75 buildings, including 54 barracks; fully equipped for training students. DPC, Los Angeles.

Twentynine Palms Air Academy, Twentynine Palms: 8,160 acres; 43 buildings, 137,465 sq. ft.; fully equipped for students, swimming pool, etc. DPC, Los Angeles.

Visalia-Dinuba School of Aeronautics, Visalia: 320 acres; 30 buildings, 163,770 sq. ft.; one air compressor and heavy kitchen and cafeteria equipment. DPC, San Francisco.

Colorado

Aircraft Mechanics, Inc., Colorado Springs: 35 acres; one large building, 60,000 sq. ft.; no machinery or portable tools. DPC, Denver.

Connecticut

United Aircraft Corp., Pratt & Whitney, Div., East Hartford: Plant L, 75 acres; Plant M, 40 acres; Plant N, 48 acres; Plant L, 2 buildings, 324,000 sq. ft. building; Plant M, 2 buildings, 296,800 eq. ft.; Plant N, 603,400 sq. ft. (Each plant has 5,000 sq. ft. personnel building); 3,928 pieces production equipment. DPC, Boston.

United Aircraft Corp., Vought-Sikorsky Aircraft Div., Bridgeport: 13.25 acres; 11 buildings, 230,066 sq. ft.; 7 pieces equipment, wood-work machines. DPC, New York.

United Aircraft Corp., Chance Vought Aircraft Corp., Div., Stratford: 3 parcels, No. 1, four acres; No. 2, three and one-half acres; No. 3, five acres (parking area); 1 hangar, lean-tos, office building; 264 pieces machinery and equipment. DPC, Boston.

Delaware

Bellanca Aircraft Corp., New Castle: .319 acres; 1 building, 15,000 sq. ft.; 127 pieces machinery and equipment. DPC, Philadelphia, Pa.

Bellanca Aircraft Corp., New Castle: 15 acres; 2 buildings, 102,600 sq. ft.; 194 production equipment, 229 portable tools, 2,502 clamps. DPC, Philadelphia, Pa.

Florida

Consolidated Vultee Aircraft, Miami Springs: 102.64 acres; 9 buildings, 197,532 sq. ft.; 6,865 machinery and equipment items. DPC, Jacksonville.

Embry-Riddle Co. Carlstrom Field, Arcadia: 213 acres (DPC), 640 acres (War. Dept.), 800 acres under verbal lease; 58 buildings, 255,713 sq. ft.; complete kitchen equipment and heating. DPC, Jacksonville

Embry-Riddle Co. (Dorr Field), Arcadia: 1,257 acres (four auxiliary fields, 640 acres); 37 buildings, 253,344 sq. ft.; fire and kitchen apparatus. DPC, Jacksonville.

Greenville Aviation School, Ocala: 387 acres; 14 buildings, 56,862 sq. ft.; two metal hangars, 58,800 sq. ft. DPC, Jacksonville.

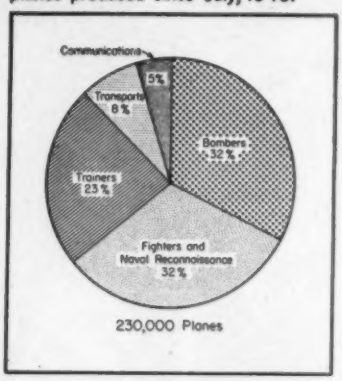
Lodwick Aviation Military Academy, Avon Park: 500 acres; 1 building, 68,538 sq. ft.; barracks, 27,600 sq. ft.; Link trainer, 2 hangars, 51,360 sq. ft.; complete kitchen and heating and lighting equipment. DPC, Jacksonville.

Lodwick School of Aeronautics, Lakeland: 262.8 acres (1,107 acres auxiliary fields); 6 buildings, 105,974 sq. ft.; complete kitchen and heating equipment. DPC, Jacksonville.

Riddle-McKay Aero College, Clewiston: 2,563 acres (1,236 acres auxiliary fields); 32 miscellaneous buildings, 103,159 sq. ft.; hangars, 53,760 sq. ft. DPC, Jacksonville.

PLANE SUMMARY

Combat planes constitute 64% of all planes produced since July, 1940.



Georgia

Darr-Aero-Tech, Inc., Albany: 243.2 acres, 1200 acres leased; 13 buildings, 94,732 sq. ft.; hangars, 66,776 sq. ft.; 55 pieces mess hall equipment, tools, etc. DPC, Atlanta.

Georgia-Aero-Tech, Augusta: 1,106.5 acres; 17 buildings, 151,250 sq. ft.; kitchen and heating equipment. DPC, Atlanta.

Graham Aviation Co., Americus: 1,212.74 acres; 15 buildings, 166,598 sq. ft.; 55 pieces equipment, mess hall, portable tools. DPC, Atlanta.

Illinois

Bendix Aviation Corp., Illinois Div., Chicago: 11.68 acres; main factory, 487,518 sq. ft.; 871 pieces production equipment. DPC, Chicago.

Chrysler Corp., Dodge Chicago Plant., Chicago: 476 acres, 16 buildings, 5,146,731 sq. ft.; 8,373 pieces machinery and equipment. DPC, Chicago.

General Motors Corp., (Buick Div.), Melrose Park: 135.49 acres; 6 main buildings, 1,250,000 sq. ft. plus; 18 minor buildings; 100,000 machinery and equipment items. DPC, Chicago.

Howard Aircraft Corp., St. Charles: 209 acres; 12 buildings, 150,000 sq. ft.; main factory 135,000 sq. ft.; 125 pieces machinery and equipment; 7 automotive vehicles. DPC, Chicago.

Interstate Aircraft and Engineering Corp., De Kalb: 11.2 acres (Plant site), 33.372 acres (runway and strips); 8 buildings (main factory etc.); airplane hangar; 90 pieces production equipment, 9 vehicles. DPC, Chicago.

Kropp Forge Aviation Co., Cicero: 9 acres; 8 buildings, 104,676 sq. ft.; 154 production tools. DPC, Chicago.

Minneapolis-Honeywell Regulator Co., Chicago: 4.35 acres; 1 building, 215,000 sq. ft.; over 600 pieces tools. DPC, Chicago.

Indiana

Bendix Aviation Corp., South Bend: 5,264 acres (3 parcels); 4 buildings, 164,705 sq. ft.; portable tools, typewriters, adding machines, etc.; automotive equipment. DPC, Chicago.

Bendix Aviation Corp., South Bend: 4,783 acres; 1 building, 144,724 sq. ft.; 390 pieces production equipment. DPC, Chicago.

Curtiss-Wright, Indianapolis: 10.30 acres; 4 buildings, 476,518 sq. ft.; 3,013 pieces machinery and equipment. DPC, Chicago.

General Motors Corp., Allison Div., Indianapolis: Plant No. 3, 6.69 acres; Plant No. 5, 216 acres; No. 3, 1 building, 100,860 sq. ft.; No. 5, 2 buildings, over 1,538,560 sq. ft.; 3,573 pieces machinery and equipment. DPC, Chicago.

General Motors Corp., Allison Div., Indianapolis: 1.20 acres; 1 building, 22,706 sq. ft.; machinery and control equipment for four test cells. DPC, Chicago.

General Motors Corp., Delco Remy Div., Bedford: 9⅝ acres; 6 buildings, 135,608 sq. ft.; 261 pieces machinery and equipment. DPC, Louisville, Ky.

General Motors Corp., Anderson: 17½ acres; 13 buildings (bad state of repair), about 210,088 sq. ft.; presses, furnaces and 5 automotive equipment, office supplies. DPC, Chicago.

The Perfect Circle Co., Hagerstown: 32.25 acres; 2 buildings, both 289,500 sq. ft.; 2692 pieces production equipment. DPC, Chicago.

Republic Aviation Corp., Evansville: 73 acres; 14 buildings, 1,746,500 sq. ft.; about 2,000 pieces machinery and equipment plus 7,850 portable tools and 25 automotive equipment. DPC, St. Louis, Mo.

Kansas

Beech Aircraft Corp., Wichita: 1.28 acres; 2 buildings, 45,000 sq. ft.; 815 pieces machinery and equipment. DPC, Kansas City, Mo.

Boeing Airplane Co., Wichita: 180 acres; 9 buildings, 1,865,490 sq. ft.; 10,212 items of machinery and equipment. DPC, Kansas City, Mo.

Kentucky

Curtiss-Wright Corp., Louisville: 131.5437 acres; 6 buildings, 1,130,538 sq. ft.; 342 pieces machinery and equipment, miscellaneous portable tools. DPC, Louisville.

Louisiana

Consolidated Vultee Aircraft Corp., New Orleans Div., New Orleans: 47.5 acres; 13 buildings, 662,265 sq. ft.; 5,384 pieces production equipment. DPC, New Orleans.

Higgins Aircraft, Inc., New Orleans: 1,075 acres; 19 buildings, 2,199,145 sq. ft.; 2,678 pieces machinery and equipment. DPC, New Orleans.

Maryland

Engineering & Research Corp., Riverdale: No land or buildings; 22 pieces production, equipment, crane, borers, etc. DPC, Richmond, Va.

Julien P. Friez & Sons., Div. of Bendix Aviation Corp., Towson: 20 acres; 1 building, 42,000 sq. ft.; 129 pieces production equipment. DPC, Richmond, Va.

Massachusetts

Wyman-Gordon Co., Worcester: 1.222 acres; 3 buildings, 35,000 sq. ft.; 291 pieces machinery and equipment. DPC, Boston.

Michigan

Aeronautical Products, Inc., Detroit: 0.65 acre; 2 buildings, 37,000 sq. ft.; 272 pieces machinery and equipment. DPC, Detroit.

Bohn Aluminum & Brass Corp., Adrian: 73.38 acres; 8 buildings, 728,500 sq. ft.; 2,136 pieces machinery and equipment, 3 pieces automotive equipment. DPC, Detroit.

Briggs Manufacturing Co., Detroit: 33,705 acres; 7 buildings, 477,963 sq. ft.; 1,795 pieces machinery and equipment. DPC, Detroit.

Buick Motor Div., General Motor Corp., Flint: 33.44 acres; 2 buildings, 601,640 sq. ft.; 6,023 pieces machinery and equipment. DPC, Detroit.

Chevrolet Motor Div., GMC, Saginaw: 15.5 acres; 6 buiuldings, 214,075 sq. ft.; 1,021 pieces machinery and equipment. DPC, Detroit.

Chrysler Corp., Detroit: 7.0965 acres; 3 buildings, 32,786 sq. ft.; 230 pieces machinery and equipment. DPC, Detroit.

Continental Aviation & Engineering Corp., Detroit: 2.95 acres; 3 buildings, 31,600 sq. ft.; no machinery and equipment, dependent on outside light and power sources. DPC, Detroit.

Continental Aviation & Engineering Corp., Detroit: 0.35752 acre; 1 building, 27,500 sq. ft.; 6,381 pieces machinery and equipment. DPC, Detroit.

Continental Aviation & Engineering Corp., Muskegon: 43.6 acres; 6 buildings, 604,451 sq. ft.; 6,381 pieces machinery and equipment. DPC, Detroit.

ANSWERING SOME HELICOPTER QUESTIONS

The past century has witnessed the development of the telegraph, electric light, telephone, automobile, airplane, radio and many other industrial marvels, which are still in the process of transforming living conditions throughout the world. And today there is wide enthusiasm over *another* revolutionary development—the helicopter . . . and wide curiosity concerning *its* future possibilities.

Therefore it is timely to publish a sincere and factual appraisal of the helicopter and an informed statement of the part it may play in future progress. As one of a dozen or more substantial and conservative industrial organizations engaged in helicopter development—the oldest in the rotary wing field—Kellett Aircraft Corporation accepts this opportunity to present some helicopter facts and to state the opinions of its management and engineering staff on the future of the helicopter.

DEVELOPMENT HAS BEEN RAPID

Today, in the United States, a half dozen or more different helicopter types are flying. To the best of our knowledge, helicopters are flying in no other country, and only in the United States is effective research and production being carried on. This is largely due to the sponsorship received from our military services during the war period.

WHAT CAN HELICOPTERS DO?

The helicopter, as a matter of normal flying operation, can rise straight into the air from a standing start; land in the same way; hang motionless in the air at low altitude over a given point for as long as the pilot wishes; fly backwards as easily as your automobile reverses; move directly sideways; fly safely inside a large auditorium.

ARE HELICOPTERS EASY TO FLY?

The men who pilot helicopters today are carefully trained, experienced men. Flying a helicopter is not a job for a novice. Many controls must be coordinated and the pilot must possess excellent skill and judgment. However, these "experts" are otherwise average individuals and one or two of them had never had experience in flying before they stepped into helicopters. It is reasonable to expect that "ease of flying" will be improved with further engineering developments.

WHAT WILL HELICOPTERS COST?

Helicopters, if they could be purchased on the market today (which military requirements will not permit), would be more expensive than the most costly automobile. Engines, intricate transmissions, control mechanisms and rotor blades require special design and construction methods. Helicopters are likely to be costly for some time to come. Of course, if the efficiency of mass production and the competitive enterprise system are permitted to have their effect, the cost is certain to come down.

ARE HELICOPTERS SAFER?

It has not yet been demonstrated that a helicopter is any more safe or less safe than other aircraft. Conventional airplanes have established impressive records for safety.

WHO WILL USE HELICOPTERS?

It is our belief that helicopters will have their first important usefulness in fields where other forms of transportation cannot serve. In many situations the helicopter will introduce important savings of time, manpower and money. For instance, in the spraying of agricultural crops, inspecting and servicing of cross country oil pipe lines and electric transmission lines; forest and shore patrol; prospecting; in mail and passenger service to areas otherwise inaccessible by air.

WILL HELICOPTERS BE FAST?

As aircraft, helicopters today are not very fast. To a world which accepts 400 m. p. h. flight as commonplace, they may never become "fast" aircraft. BUT the helicopter's as-a-crow-flies travel is much faster than automobile or train transportation, and even faster in some cases than the combinarion of land and plane travel which present-day air transport entails. The practical helicopter will not require a trip to an airport as a necessary preliminary to a flight.

WHAT ABOUT HELICOPTER CAPACITY?

Helicopters are still in the medium-power, cabin class. It may be some time before a type will develop which will cruise more than a few hundred miles without refueling or which will carry more of a load than a sedan.

HOW RAPIDLY WILL HELICOPTERS BE PERFECTED?

As in the case of the airplane, development of the helicopter is a matter of engineering. The present-day airplane is the result of many millions of engineering-man-hours over a period of years. The present-day helicopter is the result of several hundred thousand engineering-man-hours over a period of years—inconsequential as yet, compared with the engineering applied to the airplane of today. Over the years to come, additional millions of engineering-man-hours must be expended in order that the helicopter shall make its maximum contribution to progress. How soon that goal is reached depends on the rapidity with which the engineering investment can be made.

KELLETT HELICOPTERS

Kellett Aircraft Corporation has been a designer and builder of rotary wing aircraft for fifteen years. We have confidence in our ability to provide after-the-war helicopters which will be practical for many commercia uses. We look forward to widening fields of service—along with other aircraft manufacturers—in a better, happier, more air-minded future. Kellett Aircraft Corporation, Upper Darby (Philadelphia), Pa.

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

OWNERS...OPERATORS

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GENERAL TIRES—These famous aircraft tires are built to stand up under the hardest usage. Designs are laboratory tested, are the result of long and painstaking research. Proven in use with the Army, Navy, and Airlines, General Tires for aircraft of all types meet the needs of any operator.

FAHLIN PROPELLERS—Designed for increased efficiency, Fahlin propellers are built to C.A.A. specifications and carry approved type certificates. Built for engines ranging from 40 to 250 H.P., they deliver maximum possible thrust without excessive RPM's.

SCOTT TAILWHEELS — Built for strength and durability, these well-known interchangeable, steerable and full-swivel tail-wheel assemblies fit Aeronca, Cub, Culver, Luscombe, Monocoupe, Rearwin and other light aircraft equipped with spring leaf skids.

READING AIRCRAFT BATTERIES—For many years the engineering staff of Reading Batteries, Inc. has followed closely the battery rquirements of the aviation industry. Today Reading Aircraft Batteries, of the lead-acid, non-spill type, are used by the world's greatest aircraft producers. Also available: Reading "Terminal Cart" Diesel Engine Starting Batteries.

also Randolph Aircraft Finishes . . . Plasticlear Cleaner . . . Roebling Products

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RIGHT ANGLE DRIVES

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Aviation **OTTO** Corporation

BLOOMFIELD NEW JERSEY

141 Dealers in 12 Eastern States

Continental Motors Corp., Detroit: 0.8 acre; 1 building, 32,465 sq. ft.; 10,464 pieces machinery and equipment. DPC, Detroit.

Eaton Manufacturing Co., Battle Creek: 10.97 acres; 5 buildings, 351,843 sq. ft.; 1,365 pieces machinery and equipment. DPC, Detroit.

Eaton Manufacturing Co., Saginaw: 11.69 acres; 2 buildings, 192,455 sq. ft.; 120 pieces machinery and equipment. DPC, Detroit.

Ex-Cell-O Corp., Highland Park: 11.5 acres; 2 buildings, 300′ x 320′, 350′ x 385′; 580 pieces of production equipment. DPC, Detroit.

Ex-Cell-O Corp., Detroit: 2 acres; no buildings; 133 pieces machinery and equipment. DPC, Detroit.

Ex-Cell-O Corp., Detroit: 4.5 acres; 2 buildings, 245′ x 250′ and 2,100 sq. ft.; 162 pieces production equipment. DPC, Detroit.

Fisher Body Div., GMC, Grand Blanc, Flint: 347.72 acres; 8 buildings, 564,095 sq. ft.; 3,480 pieces machinery and equipment. DPC, Detroit.

Ford Motor Co., Willow Run: 1376.744 acres; 21 buildings, 5,052,177 sq. ft.; 51,950 pieces machinery and equipment, cafeteria equipment. DPC, Detroit.

Ford Motor Co., Dearborn: No land owned by DPC; 5 buildings, 134,970 sq. ft.; automotive equipment, portable tools, and 7,550 pieces production equipment. DPC, Detroit.

Ford Motor Co., Dearborn; No land owned by DPC, 0.794 acre leased; 1 building, 39,000 sq. ft.; 1,542 pieces machinery and equipment. DPC, Detroit.

Ford Motor Co., Dearborn: No land owned by DPC; 1 building, 252,000 sq. ft.; 930 pieces machinery and equipment, automotive. DPC, Detroit.

Ford Motor Co., Dearborn: No land owned by DPC; 3 pieces of production equipment, purifier, pumps, drip box. DPC, Detroit.

Nash-Kelvinator Corp., Lansing: 26.2 acres (2 parcels); 1 building, 568,552 sq. ft.; 8,231 pieces machinery and equipment. DPC, Detroit.

Packard Motor Car Co., Detroit: No land owned, 1.593 acres; 1 building, 82,000 sq ft.; 3,038 pieces machinery and equipment. DPC, Detroit.

Republic Aircraft Prod. Div., The Aviation Corp., Detroit: 3.16 acres; 6 buildings, 148,750 sq. ft.; 265 pieces machinery and equipment. DPC, Detroit.

Vickers, Inc., Detroit: 2.10 acres; 2 buildings, 92,680 sq. ft.; 219 pieces production equipment. DPC, Detroit.

Minnesota

Minneapolis-Honeywell Regulator Co., Minneapolis: 0.80 acre; 1 building, 32,000 sq. ft.; 118 pieces machinery; office furniture, miscellaneous items. DPC, Minneapolis.

Northwestern Aeronautical Corp., St. Paul: 15.03 acres; 5 buildings, 144,625 sq. ft. DPC, Minneapolis.

Mississippi

Clarksdale School of Aviation, Clarksdale: 50.739 acres; 19 buildings, 143,854 sq. ft.; 30 pieces cafeteria equipment, cooling equipment. DPC, New Orleans.

Mississippi Institute of Aeronautics, Inc., Jackson: 241.38 acres; 23 buildings, 92,655 sq. ft.; 66 pieces heating, cafeteria, etc. equipment. DPC, New Orleans.

Missouri

Anderson Air Activities, McBride: 68.96 acres owned, 501.6 acres leased; 19 buildings; kitchen equipment. DPC, St. Louis.

Cape Institute of Aeronautics, Cape Girardeau: 58.7 acres owned, 641.3 leased for home field, 580 acres leased for auxiliary fields, 33 buildings; cafeteria equipment. DPC, St. Louis.

Curtiss-Wright Corp., Airplane Div., St. Louis: 100 acres; 17 buildings, 1,510.125 plus sq. ft.; production equipment and complete cafeteria equipment. DPC, St. Louis.

Missouri Institute of Aeronautics, Sikeston: 675.51 acres; 22 buildings; kitchen equipment. DPC, St. Louis.

Pratt & Whitney Aircraft Corp. of Mis-

All that remains of the big 4-motored Jap flying boat after direct hits by U. S. Navy Liberator gunners is this wing tip with its Rising Sun insignia . . . No question about it, this Rising Sun is setting fast. Official U. S. Navy Photograph.

ONCE THERE WAS A JAP FLYING BOAT • •

It is merely small pieces now — thanks to the deadly aim of an American gunner aboard one of our huge Consolidated Liberators. These men on the firing lines of the air are doing a magnificent job . . . and American industry is backing them up with the finest aircraft in the world.

Everyone at CECO is proud that CECO carburetors and fuel pumps on the newest great Liberators and other warplanes play a direct part, however small, in helping bring Victory closer.

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We don't know exactly how it will look or what it will do. But if the past is any guide to the future, chances are that it will have a Sensenich Propeller.

Prompt repair service now available.

AIRCRAFT SENSENICH PROPELLER INC.

Adjacent to Lancaster Municipal Airport, Lancaster, Pennsylvania—West Coast Branch, Glendale, California

souri, Kansas City: 393 acres; 5 buildings; 2,875,626 sq. ft.; 21,063 pieces machinery and equipment. DPC, Kansas City.

New Jersey

Air Associates, Inc., Teterboro: 2.35 acres; 1 building, 50,600 sq. ft.; 158 pieces machinery and equipment. DPC, New York.

Air Cruisers, Inc., Clifton: 12.266 acres; 1 building, 59,000 sq. ft.; none of machinery and equipment owned by DPC. DPC, New York, N. Y.

Bendix Aviation Corp., Teterboro: 7.67 acres; 1 building, 71,600 sq. ft.; 273 pieces machinery and equipment. DPC, New York, N. Y.

Curtiss-Wright Corp., Caldwell: 20 acres; 1 building, 221,650 sq. ft.; 586 pieces production equipment. DPC, New York, N. Y.

Curtiss-Wright Corp., Newark: 1.01 acres, 1 building, 100,881 sq. ft. DPC, New York, N. Y.

General Motors Corp., Linden: 188 acres; 8 buildings, 126,234 sq. ft.; 12,316 pieces machinery and equipment. DPC, New York, N. Y.

General Motors Corp., Trenton: 48.54 acres; 10 buildings, 349,419 sq. ft.; 11,367 pieces machinery and equipment. DPC, Philadelphia, Pa.

Lawrance Engineering & Research Corp., Linden: 4.55 acres; 7 buildings, 71,850 sq. ft.; 135 pieces production equipment; incidental equipment. DPC, New York, N. Y.

Luscombe Airplane Corp., West Trenton: 9.46 acres; 4 buildings; 34 pieces production and miscellaneous equipment. DPC, Philadelphia, Pa.

Wright Aeronautical Corp., Paterson: Sites 1 and 2, leased; Site 3, 46.25 acres; Site 4, 75.85 acres; 45 buildings, 1,628,651 sq. ft.; 4,714 pieces machinery and equipment. DPC, New York, N. Y.

Wright Aeronautical Corp. (Plant, Woodridge), Paterson: 158.74 acres; 2 main buildings, 1,543,811 sq. ft.; 2,789 pieces machinery and equipment. DPC, New York, N. Y.

New York

American Aviation Corp., Jamestown: 8.3 acres; 4 buildings, 91,294 sq. ft.; 355 items machinery and equipment. DPC, New York, N. Y.

American Export Airlines, Inc. LaGuardia Field: Flying boat service station; 1 building, 89,800 sq. ft.; 422 pieces cafeteria equipment, tables and chairs. DPC, New York, N. Y.

Bell Aircraft Corp. Buffalo: 300 acres; 1 building, (main) 355,000 sq. ft., (miscellaneous buildings); 1,760 machines; portable tools; typewriters. DPC, New York, N. Y.

Bendix Aviation Corp., Sidney: 5.62 acres, 2 buildings, 174,800 sq. ft.; 2,454 pieces machinery and equipment. DPC New York, N. Y.

Chevrolet Motor Div., GMC, Buffalo: 33.04 acres; 1 building, 601,000 sq. ft.; 6,600 pieces machinery and equipment. DPC, New York, N. Y.

General Motors Corp., Chevrolet Motor Div., Buffalo: 33.334 acres; 7 buildings, 390,000 sq. ft.; equipment under Tonawanda plant. DPC, New York, N. Y.

Columbia Aircraft Corp., Valley Stream: 18.15 acres; 10 buildings, 158,830 sq. ft.; 8,200 pieces machinery and equipment. DPC, New York, N. Y.

Curtiss-Wright Corp., Airplane Div., Buffalo Plant, Buffalo: 150.822 acres; 9 buildings, 2,999,679 sq. ft.; 14,000 pieces production equipment; portable tools; typewriters, adding machines, automotive equipment; cafeteria equipment. DPC, New York.

Curtiss-Wright Corp., Kenmore: 23.573 acres and 21,506 acres; 3 buildings, main building 300′ x 800′. DPC, New York.

Edo Aircraft Corp., College Point: 8.825 acres; 4 buildings, 111,000 sq. ft.; 1,013 pieces machinery and equipment. DPC, New York.

Fairchild Engine & Airplane Corp., Ranger Aircraft Engine Div., Jamaica: 3.836 acres; 2 buildings, 340,000 sq. ft.; 733 pieces machinery and equipment. DPC, New York.

Grumman Aircraft Engineering Corp., Syosset: 13.106 acres; 8 buildings, 45,000 sq. ft.; 117 pieces machinery and equipment. DPC, New York.

Grumman Aircraft Engineering Corp., Port Washington: 11 acres; 8 buildings, 202,437 sq. ft.; 1,461 pieces machinery and equipment. DPC, New York.

Kollsman Instrument Co., Div. of Square D. Co., Elmhurst, L. I.: ½ acre; 1 building, 108,944 sq. ft.; 3 pieces production machinery. DPC, New York.

Kollsman Instrument Co., Div. of Square D. Co., Flushing: 3 acres; 1 building, 107,435 sq. ft.; 711 pieces machinery and equipment. DPC, New York.

Liberty Aircraft Production Corp., Farmingdale: 7.217 acres; 5 buildings, 150,736 sq. ft.; 335 pieces production equipment. DPC, New York.

Pan American Airways System, LaGuardia Field, New York: 2 buildings; one building has cafeteria. DPC, New York.

Republic Aviation Corp., Farmingdale: 429.143 acres; 22 buildings, 1,259,146 sq. ft.; 12,935 pieces machinery and equipment. DPC, New York.

Schweizer Aircraft Corp., Elmira: 29.119 acres; 1 building (hangar type); assorted machinery and automotive equipment. DPC, New York.

Sperry Gyroscope Co., North Hempstead, L. I.: 147.1350 acres; 28 buildings, 1,950,000 sq. ft.; 4,350 pieces production equipment. DPC, New York.

North Carolina

Fairchild Engine & Airplane Corp., Burlington: 262.46 acres; 5 buildings, 275,172 sq. ft.; 290 pieces machinery and equipment. DPC, Charlotte.

Ohio

Aeronautical Products Co., Washington Court House: 10.42 acres; 1 building, 90,000 sq. ft.; 1,543 pieces production equipment. DPC, Cleveland.

Aeronca Aircraft Corp., Middletown: 33 acres; 14 buildings, 119,152 sq. ft.; assorted machinery and equipment. DPC, Cleveland.

American Propeller Corp., Toledo: 76.97 acres; 19 buildings, 510,000 sq. ft.; production, lab, cafeteria and automotive equipment. DPC, Cleveland.

Chandler-Evans Corp., Dayton: 6.31 acres; 1 building, 62,200 sq. ft.; 336 pieces machinery and equipment. DPC, Cleveland.

Cleveland Pneumatic Aerol, Inc., Euclid: 70.3 acres; 6 buildings, 724,198 sq. ft.; production equipment. DPC, Cleveland.

Curtiss-Wright Corp., Airplane Div., Columbus: 213.87 acres; 1 main building, 1,300,000 sq. ft. and 3 buildings, 1,000,000 sq. ft.; production equipment and portable tools. DPC, Cleveland.

Eaton Manufacturing Co., Cleveland: 2.7 acres; 1 building, 69,300 sq. ft.; production equipment. DPC, Cleveland.

Eaton Manufacturing Co., Massillon: 1.015

Need Trained Men Equipped for LEADERSHIP in Commercial Transport and Fixed Base Operations?

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In the fields of Aviation Operations Engineering, Aviation Maintenance Engineering, and Aeronautical Engineering, graduates of Parks Air College have advanced to such representative positions as these:

Meteorologist—Station Manager—Crew Chief—Flight Engineer—Assembly Chief—Production Engineer—Group Leader—Liaison Engineer

Parks trained men have a long, proven record of winning and holding positions such as these in Aviation Operations Engineering, Aviation Maintenance Engineering, and Aeronautical Engineering.

Write or wire Oliver L. Parks, President, for full information about Parks Air College and Parks graduates.

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East St. Louis, Illinois

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Standard Equipment on

Boeing B-17-G Flying Fortress

Since the beginning of modern aviation Wittek Hose Clamps have been known as the standard of the industry. Today they are being used by the nation's leading military aircraft and engine builders.

WITTEK Aviation HOSE CLAMPS

...for TOUGH manufacturing jobs

Solar pioneered the present day airplane exhaust manifold industry... built the first one of stainless steel on a home made drop hammer... fought for its life in the ensuing years... and grew to maturity and leadership during the decade of general business depression before the war.

Leadership in building airplane exhaust systems and other products which must withstand hot gases, acids, heat and corrosion is the course set by Solar for today and for the years to come. Much has been learned about the design and engineering of such products... about the peculiar characteristics of stainless steel and similar alloys which make them difficult to process and fabricate.

Airplane and engine manufacturers are invited to bring to Solar any problems involving the engineering and production of new postwar products of this nature. These are the kind of manufacturing jobs Solar will continue to seek... because they are the tough jobs Solar knows best how to do. Address "Management".

ARMY (E) NAVY ★★★ ARMY (E) NAVY

SOLAR

STAINLESS STEEL PRODUCTS

SOLAR AIRCRAFT COMPANY SAN DIEGO 12, CALIF. DES MOINES 5, IA.

acres; 1 building, 27,832 sq. ft.; 40 pieces production equipment. DPC, Cleveland.

Goodyear Aircraft Corp., Akron: 80.92 acres; 3 buildings, 1,364,685 sq. ft.; 10,388 pieces machinery and equipment. DPC, Cleveland.

Liquid Cooled Engine Div., Aviation Corp., Toledo: 79.5 acres; 9 completed buildings, 284,000 sq. ft. (4 uncompleted, 24,716 sq. ft.); 328 pieces machinery and equipment. DPC, Cleveland.

Northern Aircraft Products Div., Aviation Corp., Toledo: 1.56 acres; 1 building, 115,000 sq. ft.; 235 pieces machinery and equipment. DPC, Cleveland.

Packard Motor Car Co., Toledo: 79.5 acres; 13 buildings, 308,727 sq. ft.; 328 pieces machinery and equipment. DPC, Cleveland.

Pesco Products Co., Cleveland: 2.15 acres; 1 building, 155,000 sq. ft.; 252 pieces machinery and equipment not including lab or testing equipment. DPC, Cleveland.

Thompson Aircraft Products Co., Euclid: 105 acres; 8 buildings, 641,509 sq. ft.; drilling machinery and equipment. DPC, Cleveland.

Waco Aircraft Co., Troy: 7.131 acres; 1 building, 101,347 sq. ft.; 450 pieces machinery and equipment. DPC, Cleveland.

Willys-Overland Motors, Inc., Toledo: 6.25 acres; 1 building, 467,170 sq. ft.; 3,126 pieces machinery and equipment. DPC, Cleveland.

Wright Aeronautical Corp., Lockland: 247.126 acres; 30 buildings, 5,622,171 sq. ft.; 161,775 pieces machinery and equipment, kitchen and cafeteria equipment. DPC, Cleveland.

Oklahoma

Darr School of Aeronautics, Ponca City: 36 acres; 19 frame buildings, 71,914 sq. ft.; 1 iron bldg.; 198 sq. ft.; 3 hangars, 88,896 sq. ft.; heating equipment in buildings with air-conditioners. DPC, Oklahoma City.

Midwest Air School, El Reno: No land acquired; 21 buildings, over 162,841 sq. ft.; cafeteria equipment, pumps and tanks. DPC, Oklahoma City.

Oklahoma Air College, Oklahoma City: 360 acres; 11 buildings, 88,523 sq. ft.; hangars, etc. 114,720 sq. ft.; fire equipment, cafeteria equipment. DPC, Oklahoma City.

Spartan Aircraft Co., Muskogee: No land acquired; 13 buildings, 123,443 sq. ft.; cafeteria equipment and air-conditioning units. DPC, Oklahoma City.

Spartan Aircraft Co., Miami: 20 acres; 18 buildings, 234,927 sq. ft.; miscellaneous machinery and equipment, cafeteria supplies. DPC, Oklahoma City.

Wilson Bonfils Flying School, Chickasha: No land acquired; 23 buildings, 206,492 sq. ft.; tanks, pumps, cafeteria equipment. DPC, Oklahoma City.

Pennsylvania

The Aviation Corp., Williamsport: 5.87 acres; 1 building, 160,000 sq. ft.; 737 items machinery and equipment. DPC, Philadelphia.

Blaw-Knox, Pittsburgh: 2.06 acres; 7 buildings, 80,109 sq. ft.; production equipment. DPC, Cleveland, O.

Brewster Aeronautical Corp., Johnsville: 70.492 acres; 8 buildings, 1,147,568 sq. ft.; 42,158 pieces machinery and equipment. DPC, Philadelphia.

Edw. G. Budd Manufacturing Co., Philadelphia: 557 acres; 7 buildings, 1,116,666 sq. ft.; 11,502 pieces machinery and equipment.

Consolidated Vultee Aircraft Corp., Allentown: 404.88 acres; 5 buildings, 150,953 sq. ft.; 1,756 pieces machinery and equipment. DPC, Philadelphia.

Curtiss-Wright Corp. Beaver: 31.68 acres; 10 buildings, 420,000 sq. ft.; 829 pieces machinery and equipment. DPC, Cleveland.

Jacobs Aircraft Engine Co., Pottstown: 255.086 acres; 38 buildings, 1,051,209 sq. ft.; 1,382 pieces machinery and equipment. DPC, Philadelphia.

Kaiser Cargo, Inc., Fleetwings, Div., Bristol: 14.629 acres; 3 buildings, 184,526 sq. ft.; 71,606 pieces machinery and equipment. DPC, Philadelphia.

The Murray Corp. of America, Detroit, Mich., Scranton: 23.55 acres; 5 buildings, 444,400 sq. ft.; 10,067 pieces machinery and equipment. DPC, Philadelphia.

South Carolina

Hawthorne School of Aeronautics, Orangeburg: 870.96 acres; 9 plus buildings, 100,000 sq. ft.; no machinery and portable tools, some kitchen equipment. DPC, Charlotte, N. C.

Southeastern Air Service, Inc., Bennettsville: 1,136.58 acres; 26 buildings, 166,500 sq. ft.; no machinery, 32 kitchen items. DPC, Charlotte, N. C.

Southern Aviation School, Camden: 1,105.96 acres; 12 plus buildings, 141,500 sq. ft.; 17 items kitchen equipment. DPC, Charlotte, N. C.

Tennessee

Consolidated Vultee Aircraft Corp., Nashville: 19.04 acres, 4 buildings 81,259 sq.ft.; 4,900 plus pieces machinery and equipment. DPC, Nashville.

General Motors Corp., Fisher Body Div., Memphis: 90.56 acres; 8 buildings, 707,932 sq. ft.; 5,000 pieces machinery and equipment. DPC, Nashville.

Georgia Air Services, Inc., Jackson: 290.6 acres; 28 buildings, 100,000 sq. ft.; 41 pieces cafeteria equipment. DPC, Nashville.

McDonnell Aircraft Corp., Memphis: DPC owns no land, 10 acres leased; 6 buildings, over 65,800 sq. ft; 30 pieces production machinery, smaller tools. DPC, Nashville.

Riddle McKay School of Tennessee, Union City: 850 acres owned, 435 acres leased; 19 buildings, 140,000 sq. ft.; no machinery. DPC, Nashville.

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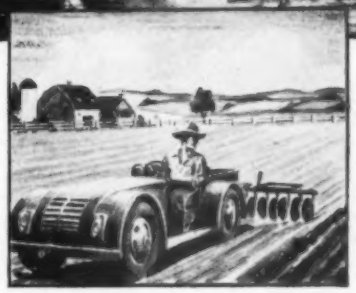
CHICAGO—DETROIT—WASHINGTON—LOS ANGELES—MIAMI

How a Famous Manufacturer Protects Engines During the

THREE MOST CRITICAL MINUTES OF THEIR LIVES



Engines made by Minneapolis-Moline Power Implement Company are powering the famous heavy-duty MM Jeeps and the many MM farm implements working for us and our Allies.

So every minute of an MM engine's years-long life is important. But most critical are the first three minutes of the initial run, when 70% of engine wear occurs.

Minneapolis-Moline protects its engines during the test run with a Bowser Oil Circulating System that serves all test blocks.

Periodic losses from scored pistons and bearings have been completely eliminated. There's an important saving in oil, too. Previously, from 7 to 9 quarts were used in testing each engine. Now the oil loss is only about 60 gallons for each 300 engines.

Another phase of Bowser Exact Liquid Control—Airport Fueling Systems—is giving equally outstanding service to the aviation industry around the world. Here is why Bowser, the pioneer in this field, is the recognized leader:

Complete Range of Equipment—Above-ground and under-ground systems up to 4,000 g. p. m. capacity. Marine, mobile, portable and centralized types for virtually every possible need. When necessary, we will engineer and build the special installation you may require.

Accurate Measurement—Bowser's famous Xacto Meter measures and records every drop of fuel before it is dispensed.

Clean, Dry, Safe Fuel—Impurities and free moisture are removed *while the fuel is being dispensed*—conclusive assurance of *clean, dry, safe fuel.*

Serv-A-Plane—For medium and smaller airports, or for fueling smaller planes, Bowser's compact, durable, easily installed Serv-A-Plane is a complete airport service station, entirely self-contained. AVIATION DIVISION, BOWSER, INC., Fort Wayne 2, Indiana.

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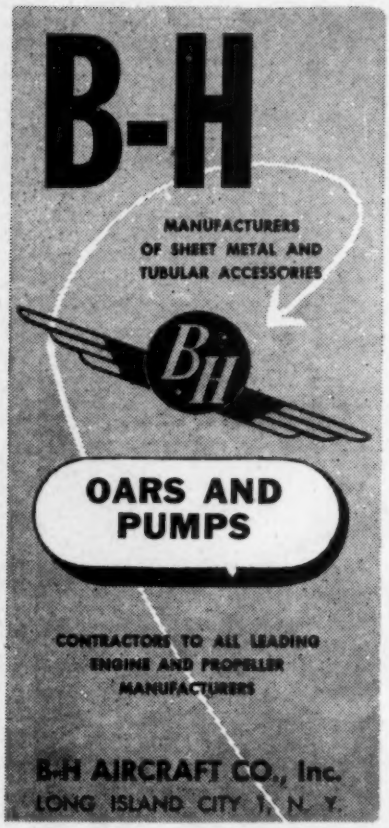
Not only has Bowser's war production earned the Army-Navy E... Bowser equipment has helped earn it for scores of other companies.

BOWSER ESTABLISHED 1885

The Name That Means Exact Control *of Liquids*



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● A well established firm of sales engineers operating from Cleveland, Ohio, contacting concerns connected with the Aviation Industry in the Eastern half of the United States and Canada, desires to expand its operations.

● Interested in representation of hydraulic items, controls, instruments and other items saleable to the aircraft industry, especially, those adaptable to the light plane field.

● An enviable reputation has been established over the past years for offering high grade engineering sales and service representation.

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AMERICAN BUILDING
WASHINGTON 4, D. C.

Texas

Air Activities of Texas, Corsicana: 465.468 acres; 17 buildings, 224,272 sq. ft.; no machinery or equipment, except kitchen installation. DPC, Dallas.

Aviation Enterprises, Ltd., Sweetwater: Main field leased from city; 38 buildings; 65 pieces machinery and equipment. DPC, Dallas.

Brady Aviation School, Brady: 248.16 acres; 20 buildings, 177,581 sq. ft.; air-conditioners and kitchen equipment. DPC, Dallas.

Brayton Flying Service, Cuero: Land leased, 501 acres; 24 buildings, 218,606 sq. ft.; air-conditioners, kitchen and mess equipment. DPC, San Antonio.

Client Breedlove Aerial Service, Lamesa: 60 acres; 13 buildings; air-conditioners and kitchen equipment. DPC, Dallas.

Coleman Flying School, Ltd., Coleman: 620 acres; 22 buildings, 130,800 sq. ft.; cafeteria equipment. DPC, Dallas.

Coleman Flying School, Ltd., Stamford: Land leased from city; 29 buildings, 158,478 sq. ft.; no machinery except kitchen installations. DPC, Dallas.

Continental Motors Corp., Garland: 104.20 acres; 6 buildings, 197,324 sq. ft.; 1,145 pieces machinery and equipment. DPC, Dallas.

Globe Aircraft Corp., Fort Worth: 6.823 acres; 5 buildings, 78,760 sq. ft.; 618 pieces of machinery. DPC, Dallas.

Hangar Six, Inc., Uvalde: 575.97 acres, leased land; 27 buildings, 167,628 sq. ft.; air-conditioners, mess and kitchen equipment. DPC, San Antonio.

Harman Flying School, Ballinger: Leased land; 15 buildings, 163,700 sq. ft.; electric powered water pump, DPC, Dallas.

Hughes Tool Co., Houston: 34 acres; 36 buildings, 333,496 sq. ft.; productive machinery. DPC, Houston.

Hunter Flying Service, Vernon: 1,541 acres leased; 23 buildings, 172,000 sq. ft.; mess hall equipment, pumps and 1 tank. DPC, Dallas.

North American Aviation Co., Inc., Dallas: 280.08 acres; 18 buildings, 2,851,344 sq. ft.; 16,062 pieces machinery and equipment. DPC, Dallas.

Pacific Air School, Ltd., Fort Stockton: 300.44 acres; 14 buildings; heating and air-conditioning units. DPC, Dallas.

Southern Aircraft Corp., Garland: 9.47 acres; 10 buildings, 109,334 sq. ft.; 699 pieces machinery and equipment. DPC, Dallas.

Texas Aviation School, Ltd., Fort Worth: Land leased (4 fields); 11 buildings, 115,600 sq. ft.; 12 pieces hangar equipment. DPC, Dallas.

Vermont

Bell Aircraft Corp., Burlington: 15.21 acres; 9 buildings, 323,500 sq. ft.; production equipment capable of being re-assembled. DPC, Boston, Mass.

Washington

Boeing Aircraft Co., Renton: 259.3 acres; flying site adjacent; 13 buildings (5 under construction), 1,804,191 sq. ft.; fully equipped machinery operations. DPC, Seattle.

Boeing Aircraft Co., Seattle: 40.7 acres leased; 1 building, 82,500 sq. ft.; no equipment or machinery. DPC, Seattle.

Wisconsin

Allis-Chalmers Mfg. Co., West Allis: 82.91 acres; 2 buildings, 905,761 sq. ft.; 1,860 items machinery and equipment. DPC, Chicago, Ill.

Ladish Drop Forge Co., Cudahy: Land not yet acquired; 6 units of buildings, over 479,340 sq. ft.; over 2,100 items machinery and equipment. DPC, Chicago.

Nash-Kelvinator Corp., Kenosha: 11.24 acres; 3 buildings, 274,825 sq. ft.; over 2,200 items machinery and equipment. DPC, Chicago.

A. O. Smith Corp., Milwaukee: 2.164 acres; 2 buildings, over 87,950 sq. ft.; 1,378 items machinery and equipment. DPC, Chicago.

A. O. Smith Corp., Milwaukee: 67.48 acres; 3 buildings under construction, 164,700 sq. ft.; over 600 items machinery and equipment. DPC, Chicago.

'Oklahoma Farmers' Join NAA

Oklahoma farmers have organized a chapter of the National Aeronautic Association, the first all-farmer group in the United States to hold such a charter. With 38 charter members, the group has headquarters at Oklahoma Agricultural and Mechanical College at Stillwater, but its membership extends across the state.

Bearing Reclamation Program

Reclamation at Army Air Force depots of millions of ball and roller bearings for military aircraft is provided for in a program agreed to by engineers of the Ball and Roller Bearing Industry and 31 bearing specialists of the Air Technical Service Command's 12 depots in the country.

Manufacturing Personnel

France

Vanderlipp

Blake

Hardick

Smith

Johnson

Arthur E. Smith has been named assistant chief engineer of Pratt & Whitney Aircraft Division, United Aircraft Corp. Smith, who has been chief engineer of P. & W. of Missouri in Kansas City, will be succeeded there by **John L. Bunce,** who has been service manager at East Hartford since 1932.

Hugh H. Johnson, for the last three years director of advertising for Bell Aircraft Co., has resigned to join Arthur Kudner, Inc., as assistant director of media.

R. B. Swanson has been named chief of contract at the Miami Division of Consolidated Vultee Aircraft Corp. He was formerly supervisor of contract administration. Convair has named **Melvin M. Mason** contracts administrator at the Nashville Division.

Edward R. Burn has resigned as director of engineering and research for Aeronca Aircraft Corp.

Roy Campbell, Jr., has been appointed advertising manager of Lockheed Aircraft Corp., succeeding **Howard W. Cheney,** who resigned early this year.

Charles W. France, Curtiss-Wright vice president and general manager of the Airplane Division plant in Buffalo since February 28, has returned to St. Louis as general manager of the company's plant. **N. F. Vanderlipp,** factory manager of the Columbus plant for more than a year, becomes general manager at Buffalo.

H. Curtis Hardick, formerly field representative of Republic Aviation Corp., has been named general manager of D. A. Comstock & Co., South Norwalk, Conn., manufacturer of B-29 engine covers and other war products.

J. Howard Blake, formerly engaged in market research for N. W. Ayer & Son., has been named director of market research for non-aeronautical divisions of the Glenn L. Martin Co., and will explore the commercial development of products outside the aircraft field.

In Los Angeles for ACCA Technical Meeting— Top-flight engineers from all sections of the country gathered in Los Angeles for the recent two-day meeting of the Airplane Technical Committee of the Aeronautical Chamber of Commerce of America. In the group were—standing, left to right: W. C. Jamouneau, Piper; Dr. Karl Arnstein, Goodyear; I. C. Peterson, ACCA; H. B. Freeman, Consolidated-Vultee; G. C. Cudhea, Fleetwings Division, Kaiser Cargo; R. H. Prewitt, Kellett; R. H. Jewett, Boeing; J. R. McGowen, Douglas; H. D. Hoekstra, Assistant Chief, Aircraft Engineering Division, CAA; R. H. Wendt, Taylorcraft; H. W. Zipp, Boeing, Wichita; W. G. Cerny, Northrop; J. H. Q. Dohse, Ford; J. E. P. Morgan, ACCA; W. A. Klickoff, Chief, Engineering Branch, Santa Monica, CAA; W. M. Smith, Bell; R. L. Schliecher, North American. Seated, left to right: E. B. Sporleder, Douglas; H. C. Wieben, Martin; R. M. Maloy, Technical Assistant to Director of Safety Regulation, CAA; C. F. Dycer, Chief, Flight Engineering and Factory Inspection Division, CAA; G. A. Page, Curtiss-Wright; E. W. Norris, ACCA; W. E. Beall, Boeing; C. L. Johnson, Lockheed; H. M. Rawdon, Beech; R. T. Wood, Interstate; R. H. Rice, North American; J. H. Gerteis, Cessna; H. M. Toomey, CAA; E. R. Scroggie, Ryan.

Conroy Made Executive Of Delta Manufacturing

Vincent P. Conroy has taken up his new duties as assistant to the president of Delta Manufacturing Co., maker of light power tools for industrial work. His headquarters for the present will be at the Delta plant in Milwaukee. The company is widely known for its manufacture of lathes. Conroy formerly was vice president of TWA.

Chamber Aide Appointed

G. O. Wiggin has been appointed assistant general manager of the Aeronautical Chamber of Commerce. He will coordinate the activities of the eight committees of the Aircraft Manufacturers' Council and assist in the management of the service departments of the Chamber. He previously was executive engineer of the Ranger Aircraft Engine Division, Fairchild Engine and Airplane Co.

Too Many Helicopter Models, Says Loening

The multiplicity of helicopter models, some of them well along in the development stage while others are little beyond an engineer's dream, is complicating the battle which the helicopter faces in attaining practicability, according to Grover Loening, eminent aviation engineer and aviation consultant to the War Production Board.

System Set Up to Remove U. S. Machines from Plants

Agencies Co-operate In Paving Way for Some Reconversion

PROCEDURES for the orderly removal of Government-owned plant equipment from the plants of private manufacturers upon completion of their war contracts are gradually taking shape to make plant space available for peacetime manufacturing at the earliest practical date.

Robert H. Hinckley, director of the Office of Contract Settlement, has indicated that it will be the policy of Government agencies which own machinery, tools and equipment no longer required by contractors engaged in war manufacture, to co-operate in every way possible in clearing private plants of this equipment as soon as possible.

Upon contract termination, owning agencies will waive or release, under terms and conditions which they believe are advisable, the war contractors of existing obligations with reference to the retention, storage maintenance and disposition of plant equipment.

War contractors are being advised, upon termination of their contracts, to notify the owning agency whether they intend to exercise or waive options to purchase. If options are to be exercised, the plant equipment will be disposed of under the terms of the option agreements.

Where plant equipment is not covered by an option or if the contractor is willing to waive his option to purchase, he is asked to send to the owning agency the following information: a list of the plant equipment itemized to show (1) plant equipment he desires to retain (2) such equipment as he desired removed to make room for other production. He must describe the nature of the other production.

Further, he must submit information concerning the amount of space that is available in the area for temporary storage of equipment and whether he has available sufficient personnel for removal and shipment of plant equipment, or whether he will be required to use outside contractors to do this work.

After failure of the owning agency to notify the contractor within 10 days that the list and data are not satisfactory, the contractor may, upon the elapse of another 10 days, expect word from the owning agency whether any plant equipment on the list has been determined as necessary for his war production. With respect to the balance of the plant equipment, he will be notified whether the Government is willing to dispose of the plant equipment which the contractor desires to retain or whether the government desires the war contractor to store the plant equipment in available storage space in his own plants or dismantle and prepare the equipment for removal and shipment.

Subject to certain provisions for negotiation and agreement over who is to bear the cost of dismantling, preparation for removal or storage, the Government will dispose to the war contractor all plant equipment that it is willing to release within 60 days or less after the receipt of the list by the owning agencies with respect to plant equipment not determined to be necessary in the contractor's war production.

The owning agency may, with respect to the balance of the plant equipment, designate certain plant equipment to be stored temporarily in available storage space in the contractor's own plant or designate the contractor to dismantle for shipment with his own personnel, or personnel under outside contracts, such plant equipment as shall not be retained for storage.

Removal Privileges

At any time, the contractor may remove from his plant and store on his own premises or elsewhere at his own expense and risk, any plant equipment which has not been theretofore determined by the Government to be necessary for the war contractor's war production, except should the facilities contracts contain inconsistent provisions and such provisions have not been waived.

After 60 days from the date that the owning agency receives his inventory list and upon 20 days prior written notice to the owning agency, the contractor may remove from his factory and store elsewhere at the risk and expense of the Government any equipment which the Government has not determined as being necessary to continued war production.

Owning agencies may, without awaiting a request from the war contractor, cause the removal of plant equipment which is determined to be in excess of the war contractors needs for war production, under terms of the existing contract rights.

Sub-contractors generally will follow the same procedures as are set forth for prime contractors except they shall route their lists and data through the war contractor.

Hinckley has asked that war contractors, without impeding war production, plan ahead all plant clearance and work out time schedules for clearance of most urgently needed space in their plants. Owning agencies have been asked to review the war contractors plans with the idea of working out mutually satisfactory arrangements in advance of actual removal needs.

Improved
WHITING MODEL T
ENGINE TRANSFER CARRIAGE

Accurately controlled hydraulic operation and efficient location of the control lever, are the features of this improved Engine Transfer Carriage. A part of the ETN Matched Assembly Line Unit Combination, the Model T simplifies the shifting of the engine from the initial assembly stand to other handling units for final assembly work.

Hydraulic control located at front of the stand, adjusts the padded engine cradle to any desired height. Write for information.

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WHITING CORPORATION

Aviation Division

Midwest Branch Opened

The General Controls Co. of Glendale, Cal., has opened a new Kansas City branch at 421 Southwest Blvd. with Robert Courtney as manager. The branch will serve customers in Kansas, Missouri, Nebraska and Iowa.

Number of Los Angeles War Workers Desiring to Leave Area in Peacetime Growing

The number of war workers in Los Angeles who intend to leave the area after the war has increased considerably in the last few months, Paul S. Armstrong, chairman of the Research Committee of the Los Angeles Chamber of Commerce, reports in a new survey of workers' postwar intentions.

In February, the committee's first survey showed 86% of the workers planning to remain, while the latest poll reveals that only 75% plan to stay in Los Angeles. Seventeen per cent intend to leave and 8% have not yet made up their minds.

Other salient points developed by the new survey are:

1. Only 58% desire to remain with their present employer. The earlier study indicated 63%.
2. Housewives wanting to return to their homes total 70%, with only 17% interested in continuing factory work. The previous survey showed 64% wanting to return home and 30% choosing to remain at work.
3. Whereas 19% of the male workers had been in small business, 25% now want to be in small business after the war. This is an increase over the earlier returns.
4. Ninety-five percent of ex-employes now on military leave want to return to Southern California, as compared with 94% at the start of the year.
5. Seventy-one per cent of servicemen report they are learning new skills in the armed forces. This is an increase over the previous report.
6. Seventy-three per cent of servicemen, whose wives are working, declare their wives do not intend to work after the war.

Hockaday's Plane Averages 19 mpg On 1,937-Mile Trip

A model weekend cruise for the postwar pleasure flier was recently demonstrated by Noel Hockaday, Burbank, Calif., aircraft designer and builder, and Capt. Penny Rogers, veteran test pilot.

Flying Hockaday's new monoplane, the pair left Compton, Calif., at 8:20 a.m., on a recent Friday, and returned at 3 p.m., the following Monday after covering 1,937 air miles in 17 hours, 40 minutes of flying time.

The cruise took them to El Paso, Tex., via Blythe, Calif., Tuscon, Ariz. They returned via Albuquerque, Winslow, Ariz., and Blythe. Rogers said they encountered a variety of flying conditions, including an hour and 15 minutes of instrument flying.

The ship maintained an average flying speed of 113 miles an hour, and 19 miles to the gallon was averaged. Ninety pounds of baggage was carried without inconvenience to pilot or passenger.

Hockaday, who heads Hockaday Aircraft Corp., Burbank, plans volume production of his high wing monoplane after the war. The plane, powered with a 130 horsepower Franklin engine, is expected to retail at about $3,000.

Luscombe's First Postwar Plane Scheduled To be Refined Model of All-Metal Silvaire

A REFINED MODEL of the Silvaire will be manufactured by the Luscombe Airplane Corp., Trenton, N. J., as the company's first postwar civil aircraft.

The company's belief is that by making an improved Silvaire available as soon as wartime restrictions are lifted, personal aircraft owners and discharged military airmen will be able to resume flying in a proved plane of a type to which they are accustomed without having to wait for the delays that attend the development of new models.

During the war Luscombe has made important gains in metal handling technique and these advances will be reflected in the Luscombe postwar products.

While postwar plans are under consideration as conditions permit, the company continues to be devoted to war production, turning out large and small all-metal precision elements for several types of combat aircraft.

The prewar Luscombe has been used since Pearl Harbor by the Civil Air Patrol and other war-effort activities.

The Silvaire is a high wing cabin monoplane of all-metal construction, excepting the covering on the wings. The cabin seats two persons side by side. The noise level is kept low by specially designed soundproofing. Sufficient gasoline for a flight of 500 miles is carried, and a special luggage compartment capable of handling a generous amount of luggage is located behind the seat. There is room for the installation of special instruments, radio and parachutes.

New Certification Plan Puts OK on Engines Not Made in 'Type' Plants

The Civil Aeronautics Administration is eliminating another headache arising out of the disposal of surplus airplanes. This relates to planes which are powered by engines produced in other than factories holding the type certificates.

Due to military necessity, the War Department, through subcontractors, farmed out a considerable amount of engine manufacturing, much of it to automobile plants. No difficulties were encountered as long as the planes were used in military operations but since some of them have been sold, as surplus, to civilians, the question of certification of the engines has created a knotty problem for CAA officials.

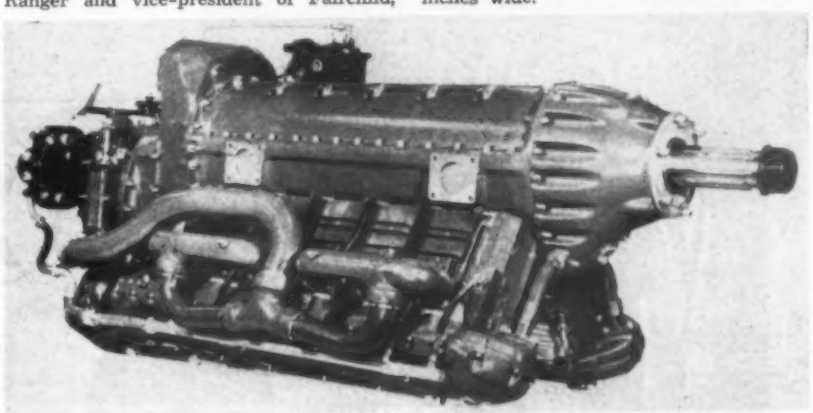
Engine Weighs Only 870 Pounds Yet Produces 700 HP

A new compact, light-weight aircraft engine weighing but 870 pounds, yet capable of producing 700 horsepower for take-off with 100 octane gasoline has been developed by Ranger Aircraft Engines Division of Fairchild Engine and Airplane Corporation.

Harold H. Budds, general manager of Ranger and vice-president of Fairchild, believes the lightweight engine will have many applications for postwar commercial aircraft, especially in the commercial feeder airline field.

Besides being 25% lighter than engines of comparable horsepower, Budds states that the new engine is far more compact than the ordinary aircraft power plant. He said that it developed nearly one horsepower for each cubic inch of displacement.

The new engine embodies new concepts in design and new developments in cooling and supercharging. The engine is a 12 cylinder "V" type and is air-cooled. Like other Ranger designs it is inverted, having its cylinders extending below the crankshaft rather than above as in conventional inline types. The engine has an overall height of 31." inches. It is 74.92 inches long and 33.28 inches wide.



Light-Weight Ranger

Cooling is accomplished by the pressure of air entering a scoop and directed around the cylinders by the ingenious arrangement of baffles which create turbulence in the air flowing around the cylinders. Cooling characteristics are enhanced by aluminum cooling fins chemically bonded to the steel cylinder barrels by use of the A1-Fin (Cap A, cap F) process, another recent Fairchild development.

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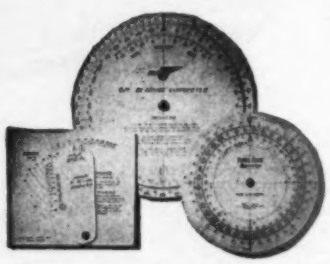
AIRLINES	**Bid**	**Asked**	**Bid**	**Asked**
All Amer. Aviation	6½	6⅞	6⅞	7⅛
Am. Airlines Pfd.	117½	119	117	118
Amer. Export Airlines	30½	31½	31	32
Braniff	20	.....	19¾	.....
Chgo. & So. common	14¾	15¼	15⅛	15⅜
Chgo. & So. Wts.	6½	.....	7¼	.....
Continental Airlines	9¾	10½	9¾	10½
Delta Air	27	29	28	30
Inland Airlines	4	4¾	4	4⅛
Mid-Continent	7⅝	8	7⅝	8
National	15¼	15¾	15¾	16⅛
Northeast Airlines	10¼	.....	10¼	.....
MANUFACTURERS				
Aeronca	5	5½	5	5⅛
Air Assoc.	11	.....	11¾	.....
Aircraft & Diesel	1¼	1⅜	1¼	1⅜
Aircraft Accessories	6½	....	7¼	....
Airplane & Marine	5	5½	5	5½
Airplane Mfg. & Supply	1.10	1.20	1.10	1.20
Central Airports	⅝	1	⅝	1
Columbia Aircraft	⅛	½	⅛	½
Continental Aviation	3	3½	3	3½
Delaware Aircraft pfd.	⅛	.....	⅛	.....
General Aviation Equip.	1	1¼	1	1⅛
Globe Aircraft	95c	1.10	95c	1.10
Harlow Aircraft	20c	35c	20c	35c
Harvill Corp. common	1¾	2	1¾	2
Interstate Aircraft & Eng.	9½	10	10⅛	10⅝
Jacobs Aircraft	3½	.....	3½	.....
Kellett Aircraft	1½	1¾	1½	1⅝
Kinner Motors	70c	80c	70c	80c
Liberty Aircraft	10¼	10⅝	10¼	10⅝
Luscombe	1½	1¾	1½	1⅝
Menasco Mfg.	1¼	1⅜	1⅜	1⅝
Northrop Aircraft	5½	5⅞	5½	5⅞
Piper Aircraft common	3⅞	4⅛	3⅞	4⅛
Piper Aircraft pfd.	39	41	39	41
Pitts. Aviation Ind.	¼	.....	¼	.....
Rohr Aircraft	7½	7⅞	7⅝	8
Std. Aircraft Prod.	60c	80c	60c	80c
Taylorcraft common	2½	2¾	2½	2⅝
Taylorcraft pfd.	6	6½	6¼	6⅝
Timm	35c	45c	35c	35c
Utd. Aircraft Prod. pfd	16½	17½	16½	17½

JARO FABRY

"I didn't want his money—
I just tried to take his
copy of TRUE Magazine."

Aircraft **Computers**



RADIUS OF ACTION—Determines the time and distance from a fixed base.

TIMED TURN—Indicates time of turn in seconds, angle of turn and the new heading, when making standard approach turns.

D/F BEARING—Converts relative QDM and QDE direction finder bearings.

COX AND STEVENS AIRCRAFT CORPORATION

P. O. Box 30 Mineola, N.Y.

The American public, the aviation industry in general and a number of aircraft manufacturers in particular would like a specific answer to this question . . . and we wish that we could give it. This much can be said, however, with but little likelihood of disagreement. At no time in the twenty-odd years since the world witnessed the first practical flight of a rotary wing ship, has professional and public interest in rotary wing flight been as active as at present, *nor has the future of the field been as promising* ★ The Autogiro Company of America has been engaged in rotary wing research and development longer than any other organization in America. Its engineering and research staff; its records of development, experimentation and thousands of hours of flight, and the right to use its numerous inventions, offer incalculable assistance to licensees. We shall be pleased to discuss details of Autogiro Company licensing arrangements with interested aircraft or other manufacturing executives ★ AUTOGIRO COMPANY OF AMERICA, Willow Grove, Pennsylvania.

Companies now producing for the war, under license from the Autogiro Company of America, include:

THE FIRESTONE TIRE & RUBBER COMPANY (G. & A. AIRCRAFT, INC.)
KELLETT AIRCRAFT CORPORATION
UNITED AIRCRAFT CORPORATION (SIKORSKY DIVISION)

AUTOGIRO COMPANY OF AMERICA ★

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Manufacturing Roundup

Duramold Division to Move

Fairchild Engine and Airplane's Duramold Division will soon move from New York City to Burlington, N. C., and will occupy space formerly used by Fairchild Aircraft Division. Duramold has received contracts for undisclosed Army Air Forces materiel. T. Kelly Pierce, assistant general manager of the division, will be in charge of the Burlington operations.

Many Douglas Suggestion Awards

The War Production Board announces that Douglas Aircraft Co. leads the nation's aircraft plants in the number of individual awards for plant suggestions during the past year. Of 138 suggestions from employes of the Douglas Santa Monica plant alone, 102 resulted in individual awards.

North American Produces 30,000

A total of 30,000 Military aircraft of five different types has been produced by North American Aviation since Sept. 1, 1939. The 30,000th plane, a B-25 Mitchell bomber, came off the company's production line at Kansas City. Besides the total of completed planes, North American also produced 6,535 equivalent planes in spares and components during the five-year period.

Convair Man Hours Saved

A total of approximately 425,000 man hours are saved annually at the Nashville Division of Consolidated Vultee Aircraft Corp. through use of a Cost Improvement Program, a system under which salaried personnel submit proposals for safer and better methods of doing jobs, the company claims.

Sinclair Division 3 Years Old

The Sinclair Division, Glenn L. Martin Co., celebrated last week the third anniversary of the opening of the division as well as the completion of the 25,000th power-operated Martin twin-gun turret, reported to be the greatest number of turrets ever manufactured under one roof anywhere in the United States.

Financial Notes

PIPER AIRCRAFT CORP. on Oct. 25 paid a 12½c dividend on its common shares to holders of this stock of record Oct. 10. Although dividends have been paid regularly and quarterly on the preferred stock of the corporation, this is the first dividend that has been paid to the holders of the common shares. As of Aug. 31, there were 571,624 shares of common stock outstanding, and 17,144 shares of preferred, which is convertible into common stock at the ratio of 10 shares of common for each one of preferred.

NORTHROP AIRCRAFT, INC. recently announced a dividend, slightly larger than last year, in two payments. One, of 25c, was paid Oct. 17 to stockholders of record Oct. 10. The second, also of 25c, is scheduled to be paid Jan. 5 to stockholders of record Dec. 15.

LIBERTY AIRCRAFT PRODUCTS CORP. has offered to its common stockholders prior subscription rights to a new issue of 80,000 shares of $1.25 cumulative convertible preferred stock, par value $20 a share, at the rate of one share of preferred for each 3½ shares of common held on Oct. 7. The offering expired Oct. 23. The common stock recently was split two for one and the number of authorized common shares was increased from 200,000 to 600,000 shares. Of the authorized common, 160,000 shares will be reserved for conversion of the 80,000 shares of preferred stock immediately issuable.

Classified

SALES ENGINEER WANTED. By Southern California light aircraft firm. A good engineer with executive ability desirable. Should be able to formulate a market research plan and organize a sales program for light aircraft and aircraft products. 25 to 35 years of age. Box 403, American Aviation, American Building, Washington 4, D. C.

AIRLINES CAPTAIN AVAILABLE. Wide experience in transatlantic and four-engined equipment. Would consider position in private industry. Phone Glebe 1920, Washington, D. C., or write Box 399, American Aviation, American Building, Washington 4, D. C.

AIRLINE POSITIONS. Immediate commercial airline positions are available for aeronautical, mechanical and electrical engineers; specialists in aerodynamics, structures, weight and balance; draftsmen. Experience with aircraft necessary. State qualifications in letter. Box 400, American Aviation, American Building, Washington 4, D. C.

AIRLINE TRANSPORT PILOT RATING by Charles A. Zweng (now ready) $4.00 postpaid. Radio and Instrument Flying $4.00. Zweng Encyc. Aviation Dictionary $6.00. Pan American Navigation Service, Dept. A-5, 12021 Ventura Boulevard, N. Hollywood, California.

DESIGN ENGINEER WANTED. Young, progressive engineer. Design and drafting ability necessary. Interest and knowledge in light aircraft, structures, power plants or hydraulics and electronics desirable. Box 401, American Aviation, American Building, Washington 4, D. C.

JOHN BULL CALLS UNCLE SAM. On behalf of a syndicate of British aircraft technicians. I invite American manufacturers and distributors of ultra light aircraft equipment to negotiate with us immediately for post-war trading.

We shall require supplies of every type of component for aeroplanes under the 50 h.p. class, engines, props, instruments, radio, and every imaginable fitting and accessory. We shall want technical and instructional books, flying clothes, and so on. Complete gliders and sailplanes, approved designs for amateur constructed aeroplanes, all these sort of things will be in demand here.

We are prepared to act as your agent if you so desire. Executives are requested therefore to write to me direct submitting comprehensive details of their proposals. All such communications will be treated with the utmost confidence. Let us hear from you. America. G. A. Chamberlain, 86, Mildred Ave., Hayes, Middlesex, England.

A AND E FOREMAN NEEDED. Man capable of taking complete charge of shop force modifying and overhauling DC-2, DC-3, C-47 and similar airplanes. Must have thorough knowledge of all Douglas transport models and working knowledge of other large airplanes. Must be able to handle men and produce results. A and E license necessary. Knowledge of material and parts sources in Southern California helpful but not absolutely essential. State age, experience, and salary expected. Availability certificate required. Send reply to Box 398, American Aviation, American Building, Washington 4, D. C.

PRODUCTION ENGINEER WANTED. Tool designer with tool planing ability. Capable of setting up a Production Engineering section of Small Aircraft Plant, including manufacturing methods, procedures and routing systems. 25 to 35 years of age. Box 402, American Aviation, American Building, Washington 4, D. C.

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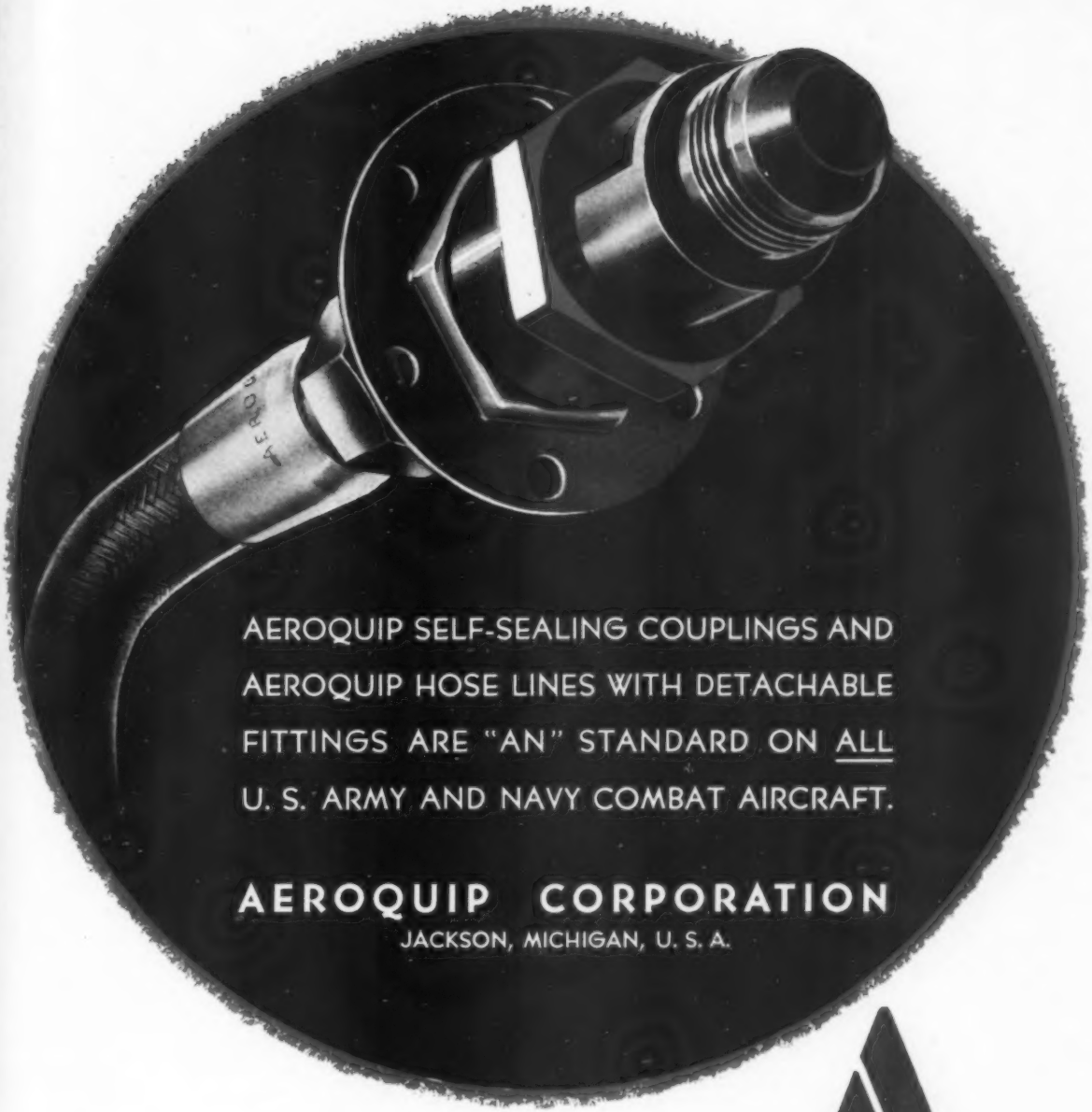

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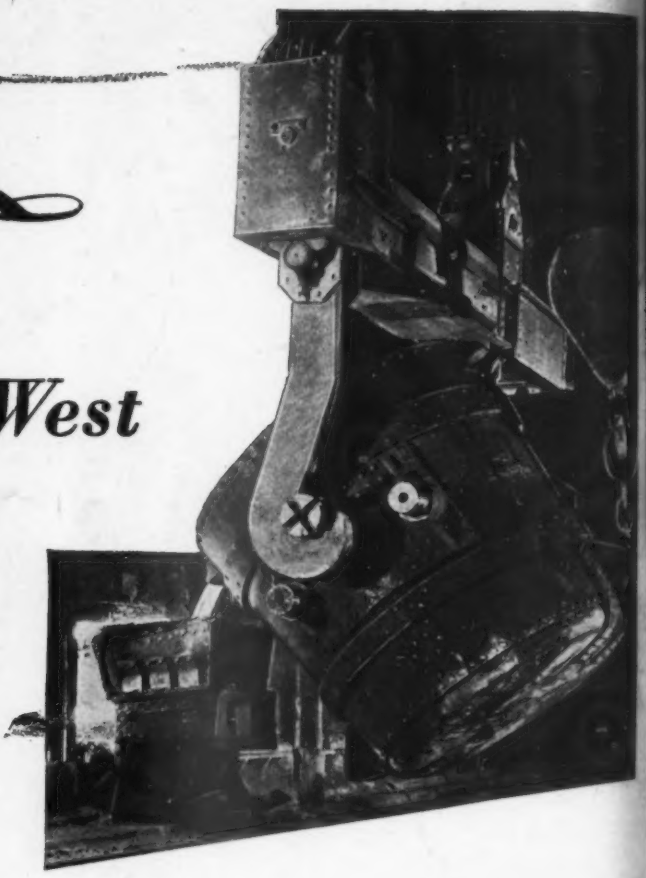
Flying the New West



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WESTERN AIR LINES — most recent airline to switch to the use of *Texaco Aircraft Engine Oil* exclusively — has been serving the West for close to 20 years . . . and, even under the necessities of wartime operation, has provided every possible comfort and service for the essential traveler. Growing with this vast, new, industrial area, Western Air already has well-advanced plans to assure even greater facilities for air traveler and shipper, as soon as conditions permit.

In choosing Texaco for its equipment, Western Air Lines is aligning itself with other leaders in this field. In fact . . .

More revenue airline miles in the U.S. are flown with Texaco than with any other brand.

Texaco Aviation Service Engineers are always glad to cooperate, not only in the selection of suitable lubricants, but also in furnishing, out of their broad experience, helpful information on maintenance and overhaul practices.

Texaco Aviation Products are available through more than 2300 Texaco distributing points in the 48 States. The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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